THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

JUNE, 1898.

DEFECTIVE DEVELOPMENT OF THE FACE AND CRANIUM IN A CALF.

BY O. CHARNOCK BRADLEY.

CASES in which deformity of the face is present are not by any means rare ; *hare-lip*, *cleft palate*, etc., being well known to those practitioners whose lines are cast in breeding places. Nor is the cause, or rather mode of production, of such anomalies, any longer a matter of conjecture, it being now known that lack of complete development and coalescence of those processes which contribute to the formation of the face result in the production of these deformities.

A more extensive malformation such as is described below is, however, of exceedingly rare occurrence ; such, at least, is the impression I have gained from an examination of veterinary literature. The general practitioner, however, cannot be accused of *scribendi cacoethes*, even when he has something it would really be profitable to his brethren to hear,—which he often has. Therefore it is reasonable to assume that cases have occurred, perhaps even frequently, but have not been recorded. It is, moreover, to be regretted that the study of Teratology is not more indulged in, especially by the practitioner whose work lies largely in the province of obstetrics. Much valuable and highly interesting material, which at present only finds its way to the dunghill, might be rescued and utilised. Even should the veterinarian be unable from lack of time or inclination to himself examine and report upon such teratological material as he may encounter, there are always those who will consider it a pleasure and privilege to do so for him.

Recently, through the kindness of Mr. Frank B. Pearson, of Chesterfield, to whom I owe grateful thanks, I became possessed of the head of a bovine fœtus, so malformed that I concluded that a description of it might possibly be of interest to the readers of this Journal.

An examination prior to dissection revealed the absence of the face with the exception of the lower jaw, and in addition some curtailment of the natural limits of the cranium.

Of nose and eyes there was not a vestige; the only thing which served to indicate the position in which the eyes ought to have been was a small opening leading into a narrow, short canal, which ended blindly. Surrounding this orifice were very imperfect eyelids, with rudimentary eyelashes. This could easily be made out on the left side, but on the right the head had been somewhat damaged, presumably during delivery; but even here, with a little care, the remains of a similar opening and canal were disclosed. In the mutilation to which the head had been unfortunately subjected,

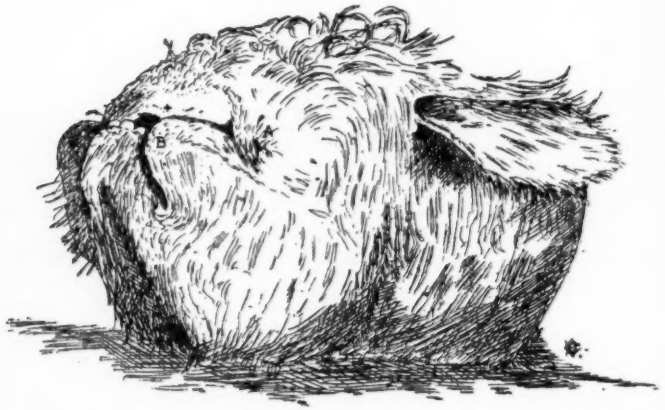

FIG. 1. A., rudimentary eyelids. B. B., representatives of upper lip. + membrane forming anterior boundary of the defective cranium.

the top of the tongue and the right external ear had both been removed. The left ear was present and fully formed.

The lower jaw, with the integument covering it, was well developed, but very much bent in its anterior part in an upward direction. Six incisor and two canine teeth were present, well formed and freely projecting above the level of the gum.

What afterwards turned out to be the anterior part of the defective cranium (+ in fig. 1) was devoid of hair, and consisted simply of dense membrane, there being no bony development within it.

Rudiments of the upper lip were present, their position being indicated in Fig. 1. (B, B).

On proceeding to a dissection it was found that a strand of strong fibrous tissue led from the blind extremity of the canal representing the orbit to the membrane above-mentioned, as forming the anterior boundary of the cranium.

The cranium was represented by the occipital, temporal, and post-sphenoid bones only; frontals, parietals, ethmoid, and pre-sphenoid being totally absent. The cavity of the cranium was of much smaller capacity than an examination of the entire head would have led one to suppose, in consequence of the great thickness of the supra-occipital which formed its roof.

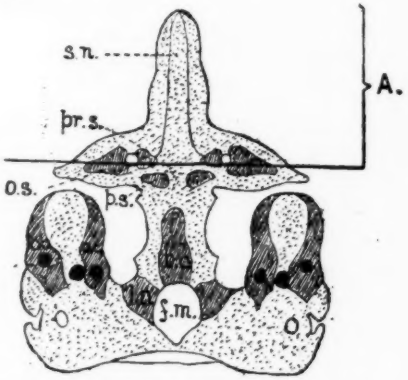

FIG. 2. Scheme of fœtal cranium viewed from below. (After Huxley.)
The more heavily shaded parts represent ossific centres, the rest being cartilaginous.
s. n., septum nasi; *pr. s.*, pre-sphenoid. *o. s.*, orbito-sphenoid; *p. s.*, post-sphenoid. *o.c.*, *o'. c'.*, ossific centres in periotic capsule. *b. o.*, basi-occipital; *l. o.*, lateral occipital. *f. m.*, foramen magnum.
The part indicated by A. was not developed in the specimen which forms the subject of this paper

The only parts of the brain present were the medulla oblongata and a rudimentary pons varolii. The medulla was well developed, and gave origin to the customary cranial nerves. I failed to discover any traces of the 5th nerve, and the rudimentary pons itself was somewhat intimately connected with the membranous anterior boundary of the cranium.

No trace of cerebellum was discoverable, the 4th ventricle being roofed in by the cranial meninges.

The hard and soft palates were, of course, wanting. The tongue—or, rather, what remained of it, for its tip, as above

remarked, had been cut off—was much bent, apparently owing to the cramping produced by the curvature of the lower jaw; it, moreover, occupied the anterior part of the pharynx for the same reason.

No other abnormality of moment presented itself.

From the above brief description it will be seen that the only fully-formed part of the face was the lower jaw. That the rest of the face was not entirely wanting is indicated by the rudiments of an upper lip and the opening and canal which represented the orbit. The *lateral nasal* and *maxillary* processes at least must be considered as not totally unrepresented.

The parachordal part of the cranium (*i.e.*, that part developed in connection with the notochord) was alone present; the prechordal portion, from which the presphenoid and ethmoid originate, being without representative. Fig. 2 will serve to indicate how much of the cranium has failed to develop.

I find that the museum of this College contains a dry preparation which, studied in conjunction with my specimen, is highly interesting. In the museum specimen, development has gone on so far as to produce a palate and nasal chamber. The palate is cleft from end to end, and the roof of the nasal chamber is also cleft, the curved lower jaw protruding into the cleft; there is no septum nasi. It is difficult to determine whether the cranium is implicated or not. This specimen we may consider, therefore, exhibits a state of malformation intermediate between that of my specimen and the commoner conditions of hare-lip and cleft palate.

In the days when the "maternal impression" theory of the production of monsters was believed in, defective development of the face was attributed to the supposed chasing or frightening of the pregnant female by a bull-dog; this explanation having its origin in the remote resemblance of the head of the monster to the head of a bull-dog. Such æsthetic explanations, however, must give way, in this prosaic age, before the advance and spread of embryological truths.

RHEUMATISM IN THE DOG.

BY E. WALLIS HOARE, F.R.C.V.S., CORK.

To those practitioners who are interested in canine pathology, the above subject presents much important material for reflection and investigation.

It may and has been stated that the term rheumatism is a

very convenient one to apply to obscure affections when we are ignorant of their real nature, and find it necessary to give them a name, and form what is known as a "working diagnosis."

In modern works on canine medicine, very little attention is given to certain forms of rheumatism, and on consulting them for information as to diagnosis and treatment, we must confess that we cannot derive therefrom the assistance we are in search of.

It is to that variety commonly known as muscular rheumatism that we propose to direct attention in the present article.

According to our experience, the abdominal muscles, also those of the back and loins and of the neck, are the most frequent seats of rheumatism in the dog.

When the abdominal muscles are affected, the case may be very easily mistaken for one of acute intestinal obstruction or for peritonitis.

There is acute pain, which is of a paroxysmal character; the abdominal region is distended and very tender, even the slightest pressure causing the patient to emit the most vigorous cries.

At the outset of the attack, vomiting may be present, and there is usually total loss of appetite.

Respiratory movements are accelerated, and the animal pants constantly. The cardiac action is greatly disturbed, being quick and irregular, and the temperature is elevated.

Thirst is a frequent symptom, and there is obstinate constipation of the bowels.

A symptom that I have observed in every case is a marked abdominal pulsation; this is very characteristic, and may easily be mistaken for one of some serious affection of the circulatory system. The duration of the case varies; in some instances it may last from seven to ten days, or even longer, but we must be prepared for intermissions, and just as the patient appears to have recovered, another attack may suddenly supervene. It frequently happens that the muscles of the back and loins may be involved when the rheumatism has left the abdominal muscles; such cases often prove very troublesome.

In other instances the muscles of the neck and jaws become affected, and mastication and deglutition are accompanied with great pain and violent screams.

In these cases diagnosis is often very difficult at first, and the patient resists any efforts at manipulation of these

regions. He gets fits of violent screaming even when alone, but during the intervals nothing abnormal can be detected.

In the older works on canine diseases we find the affection at present under consideration very accurately described.

Thus Blaine, in his "Canine Pathology," states (page 142 *et seq.*) that "rheumatism never exists in a dog without its affecting the bowels," and further on he describes the "spasmodic colic of rheumatism."

He also believes that rheumatism is a frequent source of paralysis in dogs.

Youatt was also of opinion that rheumatism may be a cause of paralysis.

However, we must admit that we encounter a large number of cases of paralysis of the hind limbs in dogs, which come on without any apparent cause and the clinical history of which certainly does not point to rheumatism as a cause.

It may be stated that pet-dogs, usually over-fed and in fat condition, are most frequently the subjects of rheumatism, and when brought for treatment they certainly present an appearance demanding sympathy, as the pain evidenced by their screams must be very acute, though at the same time very annoying to the practitioner.

With regard to treatment, experience teaches that the first indication is to clear out the alimentary canal, the safest agents for this purpose being castor oil, with a moderate dose of calomel. Until the bowels have acted freely no further treatment can be of avail.

If the stomach be irritable, I have found it of advantage to administer the oil in the form of capsules, as vomiting is not then so easily induced.

To relieve the severe pain it is usually necessary to give a few doses of a sedative agent, and the liq. opii. sedativus (Battley) is the best for this purpose.

Hot fomentations, in the form of flannels wrung out of hot water, should be diligently applied to the abdominal walls, and when these are discontinued the parts should be wrapped up in cotton wool, to prevent chill.

If the bowels do not act, repeat the castor oil, and throughout the entire course of the affection the bowels should be kept free.

When the bowels have acted, the patient should be put on moderate doses of sodium salicylate.

If gastric irritability be present, good results will ensue from the administration of mist. bismuth c. pepsin (Hewlett's), an invaluable preparation in gastric affections.

As regards diet, I believe in keeping the patient on milk and lime-water, alternated with any of the well-known extracts of beef.

In very dainty feeders and where much exhaustion is present, Brand's essence of beef is the best agent. When the muscles of the back or neck become affected, stimulating liniments prove of service; the parts should also be wrapped up in cotton wool.

Many of these cases prove very intractable to treatment, and the affection recurs.

In such I have seen good results from the administration of sodii bicarb., nux vomica, and gentian or calumba. Occasionally quinine proves of service.

As preventive treatment, we should advise avoidance of chills and wet, and proper dieting and exercise.

With reference to the treatment of paralysis due to rheumatism, the indications are by no means obvious.

In first attacks of this kind the administration of a brisk purgative followed by nux vomica or the hypodermic injection of strychnine, and the application of stimulating liniments to the dorsal region is frequently followed by good results. But there are cases in which every form of treatment fails to bring back the power of movement to the hind limbs. Still, these should not be given up too hastily, as I have seen cases that recovered under homœopathic treatment, although I was quite sure that they were hopeless, at the same time knowing full well that the treatment adopted by the owners could not influence the affection in any way. But in obscure cases of this nature it is difficult, if not impossible, to ascertain, in a definite manner, the probable results, even if unaided by any form of treatment.

There is yet much to be learned with reference to the pathology of paralysis of the posterior extremities in the dog.

Different views have been advanced as to the causation of this affection, and it would appear as if it depended on a variety of conditions.

We see cases depending on impaction of fæces in the colon that make a good recovery after the administration of cathartics and enemas.

In these it is believed that reflex action has to do with the paralysis.

But there are other cases in which the paralysis persists after the intestinal canal has been cleared out, and we look in vain for a solution of the problem.

Subcutaneous injections of strychnine have been tried, also the galvanic battery, but in too many instances failure has been the result.

CONGRESS OF THE ROYAL INSTITUTE OF PUBLIC HEALTH,

18th to 23rd August, 1898.

HARRY STREET, OFF GRAFTON STREET,
DUBLIN, *6th May*, 1898.

To the Editor of THE VETERINARY JOURNAL.

DEAR SIR,—In connection with the Congress of the Royal Institute of Public Health, to be held in Dublin in August next, it has been arranged to have a Conference of Veterinarians to consider and discuss "Tuberculosis" in its relation to public health.

We are instructed by the Committee of this Conference to ask your assistance in bringing the matter before the profession with a view to obtaining the assistance of those who can conveniently render it.

Briefly enumerated, the salient points which it is proposed to bring before the Conference are—

1. The urgent necessity for a more thorough and law-enforced system of veterinary hygienic inspection.

2. Suggestion of practical measures for the increased use of tuberculin, obviously relegating its control and use to duly qualified practitioners.

3. Plain words of advice to breeders, showing them the enormous pecuniary gain that would result from the extermination of this disease, collaterally with the good thus resulting to public health.

The Report of the Royal Commission on Tuberculosis, just published, definitely establishes its transmissibility to man by affected meat or milk.

It is hoped to awaken the British public from its strange apathy to its own interests and indifference to the labours of our profession.

With this view we solicit your earnest assistance through the medium of your widely read columns.

We are, dear Sir,
Yours obediently,
THS. MATTHEWS, F.R.C.V.S., F.R.S.,
R. B. FREEMAN, M.R.C.V.S.,
Hon. Secs., Veterinary Conference.

THE NEW VETERINARY COLLEGE, EDINBURGH.

At the recent examinations held by the Royal College of Veterinary Surgeons, and conducted by the following members of the Board of Examiners—Dr. Fleming, C.B.; Colonel Walters, C.B.; Professor Duguid, Board of Agriculture; Captain Moore, A.V.D.; Captain Smith, A.V.D.; Dr. Wood, Dr. Muir; Messrs. W. Hunting, F.R.C.V.S.; J. Freeman, F.R.C.V.S.; W. Woods, F.R.C.V.S.; J. Malcolm, F.R.C.V.S; J. Clark, F.R.C.V.S.; H. Oliver, F.R.C.V.S.; W. Pallin, F.R.C.V.S.; Dr. Haycraft, Dr. Green; F. B. Goodall, F.R.C.V.S.; W. H. Bloye, F.R.C.V.S.; D. Munro, Professor Somerville, Dr. Peacock, and W. Wilson, F.R.C.V.S., the following students from the above college passed their first professional examination:—Messrs. F. J. Dunning, Beverley; W. A. Elder, Wokingham; R. Finch, Ormskirk; H. Kauntze, Oldham; *H. Kirby, Leicester; — Rutherford, Edinburgh; F. Sugden, Slaithwaite; T. D. Ward, †G. Willows, Long Sutton. The following passed the second professional examination:—Messrs. S. Drabble, Bradford; *E. Ashworth, Ramsbottom; S. C. Binks, Alnmouth; †W. G. Burndred, Hanley; *F. Crossley, Halifax; J. P. Dumphy, Llandudno; *H. E. Martin, High Legh; A. Macfarlane, Aberdeen; *T. Runciman, Ely; *B. Runciman, Ely; A. Spreull, Dundee. The following passed the third professional examination:—Messrs. G. Barras, York; *J. Evans, South Wales; *W. L. Gascoyne, Ashby de la Zouche; *A. M'Nae, Dumfries; R. Plunkett, Ireland; *H. Taylor, Canada; C. R. Twist, Birmingham; H. Dyson, Huddersfield, and Duncan Macdonald, Loch Maree. The following passed the fourth and final examination:—E. Morrison, Bakewell; M. Webb, Ireland; R. J. Bailey, Bury—and obtained their diplomas. The following passed the theoretical portion of the final under the old rules:—Messrs. T. C. Howatson, Abergele; R. Williams, Aberystwith; J. H. White, Walsall; H. Whipp, Beverley. The following passed the practical portion of the final and obtained their diplomas:—Messrs. T. C. Howatson, Abergele; R. D. Williams, Aberystwith, and M. Mitchell, Tipperary.

The Medals and Certificates of Merit were awarded to the

† 1st Class honours, * 2nd Class honours.

successful students on Wednesday, May 11th, by Principal Williams, and were gained as follows:—

Pathology of the Horse.

Highland and Agricultural Society Silver Medal—T. C. Howatson. Certificates of Merit, 1st Class—H. M. Webb, W. M. Ogilvy; 2nd Class—R. J. Bailey, E. Marrison, G. E. Hamilton, H. Whipp.

Pathology of the other Domesticated Animals.

Highland and Agricultural Society Silver Medal—H. Whipp. Certificates of Merit—T. C. Howatson, R. J. Bailey.

Meat Inspection.

Highland and Agricultural Society Silver Medal—T. C. Howatson. Certificates of Merit, 1st Class—W. L. Gascoyne, H. Taylor, E. Marrison, R. J. Bailey, H. Dyson; 2nd Class—H. M. Webb, H. Whipp, G. E. Hamilton.

Pathology and Morbid Anatomy.

Highland and Agricultural Society Silver Medal—W. L. Gascoyne. Certificates of Merit, 1st Class—H. Taylor, A. McNae; 2nd Class—H. Dyson, D. McDonald.

Materia Medica.

Highland and Agricultural Society Silver Medal—H. Taylor. Certificates of Merit, 1st Class—W. L. Gascoyne, A. McNae; 2nd Class—H. Dyson, J. Evans.

Hygiene.

Highland and Agricultural Society Silver Medal—H. Taylor. Certificates of Merit, 1st Class—A. McNae, W. L. Gascoyne, J. Evans; 2nd Class—H. Dyson, D. McDonald.

Senior Anatomy.

Highland and Agricultural Society Silver Medal—A. A. Walker. Certificates of Merit, 1st Class—Benjamin Runciman, E. Ashworth, Tom Runciman, A. Macfarlane; 2nd Class—J. Stafford, F. Crossley.

Physiology.

Highland and Agricultural Society Silver Medal—A. A. Walker. Certificates of Merit—A. Macfarlane, B. Runciman.

Histology.

Dr. Hunter's Medal—F. Crossley. Certificates of Merit—A. A. Walker, E. Ashworth, W. G. Burndred.

Practical Anatomy.

Professor O. C. Bradley's Medal—A. A. Walker. 1st Class Certificates—Ben. Runciman, E. Ashworth, H. E. Martin; 2nd Class Certificate—A. Spreull, Tom Runciman, A. Macfarlane.

Junior Anatomy.

Highland and Agricultural Society Silver Medal—H. Kirby. Certificates of Merit, 1st Class—H. H. Lord, H. B. Kauntze, R. Finch; 2nd Class—T. B. Rutherford, W. A. Elder, J. C. Smith.

Chemistry.

Highland and Agricultural Society, Silver Medal—T. Walker.

Botany.

Highland and Agricultural Society Silver Medal—W. A. Elder. Certificates of Merit, 1st Class—G. T. Willows; 2nd Class—A. B. Mattinson, R. Finch, H. B. Kauntze.

Zoology.

Highland and Agricultural Society Silver Medal—H. Kirby. Certificates of Merit, 1st Class—H. H. Lord; 2nd Class—A. B. Mattinson, G. T. Willows, H. B. Kauntze.

Demonstration of Anatomy.

Bronze Medals—H. Taylor, W. L. Gascoyne.

Curators of Museum.

Bronze Medals—H. Dyson, J. Stafford.

Bacteriology.

Certificate of Merits, 1st Class—H. Taylor, W. L. Gascoyne, H. Dyson, J. Evans, D. McDonald, A. McNae; 2nd Class—T. C. Howatson, H. Whipp, G. E. Hamilton.

EDINBURGH VETERINARY MEDICAL SOCIETY.

President's Special Essay (on Evolution of the Horse).

Silver Medal—T. C. Howatson; Certificate—R. J. Bailey.

Best General Essay.

Silver Medal—E. Marrison; Certificate—T. C. Howatson.

Best Communication.

Silver Medal—H. Whipp; Certificate—E. Marrison.

Secretary—H. Taylor, Certificate.

Treasurer—A. McNae, Certificate.

The "Ashton" Silver Medal for the student passing the best practical examination was gained by T. C. Howatson.

The College Bronze Medal for the second best was gained by E. Marrison.

The Gold Medal awarded by the Edinburgh Yorkshire Society to the Yorkshire student passing the best first professional examination will be given shortly.

The Gold Medal awarded by the Edinburgh Yorkshire Society to the Yorkshire student passing the best second professional examination will be given shortly.

The Principal's £20 Gold Medal, W. Jowett.

The PRINCIPAL, during the course of his remarks, mentioned that it was now thirty-three years since he became a veterinary teacher. In the old days, a matter of ten months' study was sufficient time to obtain the diploma; now it took no less than four years, and four years of very hard work, before becoming a veterinary surgeon. Owing to the great severity of the examinations, the numbers of candidates for the diploma had been reduced within the last few years, and though, like all other colleges, that one had suffered from the diminution, yet he had no reason to be dissatisfied, and now, with the probabilities of there being required innumerable veterinary surgeons to hold the posts of veterinary inspectors of meat, milk, etc., he felt convinced that the numbers attending the various schools would soon be back to their former numbers. He felt thoroughly satisfied with the assiduity of the students themselves during the past session, and was sure that they would come through with great credit to themselves, their teachers, and their college.

Dr. HUNTER proposed a vote of thanks to the Principal, and the donors of prizes, which concluded the proceedings.

Cases in Practice.

PURPURA HÆMORRHAGICA.

BY W. OWEN WILLIAMS.

On Tuesday, the 26th of April, I was asked to see a bay gelding suffering from cold. On arrival I found him in a loose box, standing stiffly, with his head extended, and at first glance to look like a case of tetanus. On enquiry I found that he had been off work for some time, as he had a cold and sore throat and didn't feed well. I was not called in then, as he seemed to be getting better, but the master, having gone away this day, the manager didn't like the responsibility, so sent for me. On further examination, I found the *eyes bright* and the *visible mucous membranes normal*; pulse 80, temp. 103·5; respirations rather deep, and about 12 per minute. The extremities were cold, and there was a hard diffuse swelling in the parotid region, but no difficulty in swallowing or breathing. I had his throat stimulated, warm clothing put on him, ordered soft warm food, and gave him chlorate of potash powders in treacle on the tongue.

Being evening, I said I would return on the Thursday morning, when I found him worse, throat more swollen, and his near hind leg typically (purpura hæmorrhagica) swollen to half way between the hock and stifle, and his near fore knee enlarged; his pulse, temperature, and respirations were unaltered, the visible mucous membranes *were normal*, his dung was soft, and his urine high coloured.

I then blistered his throat, and continued the chlorate of potash powders, and tried him with milk, which he refused; he, however, ate a few potatoes.

Friday.—All four legs typically swollen, and in many places oozings of clear yellow serum. Mucous membranes of eyes quite normal, but petechiæ in the nostrils and purple ecchymosis on the nose (which was a white one). On Saturday morning the head was much swollen, and he had more the appearance of a hippopotamus, with his large nostrils and small bright twinkling eyes. The throat was more swollen, but still no interference with deglutition or respiration. I endeavoured to find pus in the parotid region, but though I passed the blade of Symes' abscess knife about 1½ inches deep into the swelling, I failed. I ordered poultices to the throat, and cold water and vinegar applications to the swollen nostrils.

Sunday morning.—Swellings greater, and now on the breast and under the sternum, and slight interference with respiration, no appetite, and generally worse: tried again for pus, but unsuccessfully.

Sunday night.—At about ten o'clock he broke into a profuse perspiration and showed colicky pains, lay down twice and got up again. When I arrived he was standing quietly and bathed in a cold perspiration; pulse 80, weak but regular; temperature 104·2. Wiped him down, put on dry, warm clothing, but gave no medicine. During the night he gradually got better, no pain, and the swellings became lessened. I then purposed trying iodine intratracheally; but when I saw him on Monday evening he was so much better that I desisted. On Tuesday the limbs and the nostrils were much better as regards the swellings, but the limbs were extremely stiff and painful, and crackling sounds were heard when he moved; other things about the same. But the temperature was down to 102·4. Still no pus, though I lanced deeply for the third time.

Wednesday.—A better appetite, ate some mashed turnips, and a little hay. Swellings disappearing, except in the region of the sternum, where it was increased, but terminated abruptly at the xyphoid. The sheath had commenced to swell for the first time. In addition to the chlorate of potash, I also prescribed 40 m. of Hewlett's preparation of cinchona three times daily.

Thursday.—Not quite so well, nothing special to note.

Friday.—The throat swelling came to a head since yesterday and had burst during the night, and a large quantity of pus had been discharged.

Saturday and Sunday.—Doing well. Appetite much improved and generally much more lively as indicated by his ears and hind legs when his temperature was taken. From then until now (the 15th May) he has continued improving, and he is able to take a little exercise. I am still continuing the Hewlett preparation, which, to my mind, has been of the greatest service in this case, which is one of the worst I have had.

It is of interest to note (1st) the various points at which the swellings appeared and disappeared; (2nd) the marked absence of indication of disease in the mucous membranes of the eye and of the clearness of the eye itself; (3rd) the comparatively slight fluctuation in both the temperature and the pulsations.

FRACTURED RIB.

BY A COUNTRY M.R.C.V.S.

CALLED to see a cow said to be suffering from staggers, and found the patient presenting symptoms of brain affection. The pupils were dilated, the gait staggering, and there was partial paralysis of hind parts.

I gave chloral and potas. brom. in treacle every four hours, and ordered frequent injections of warm water.

Next day the cow was on her feet again and appeared to be improving, but presented a very curious symptom. The urine was very dark in colour, and when caught and examined was found to contain a large quantity of blood.

On further examination I found that the vagina was filled with clotted blood and also that there was blood in the rectum. On exploring the rectum carefully I discovered on the left side and far up and towards the spine a large rounded swelling. The little fæces that were passed contained blood. The cow now began to strain very severely. Thinking that, perhaps, the attendants had injured the bowel by rough usage of the injection pipe, as the cow was good beef I ordered slaughter.

On *post-mortem* examination I was surprised to find that the last rib was fractured close to its junction with the spine.

The broken end of the rib had ruptured the kidney and was protruding into the bowel.

As there was no history of a fall or a blow the cause of the fracture remains obscure.

VOLVULUS AND RUPTURE OF STOMACH.

A HACKNEY mare, three years old, showed symptoms of indigestion, accompanied by mild, colicky pain. On visiting the mare I found her standing with the head turned to the right side. This she would do persistently. Occasionally she would go down and give a half roll or two, and then rise again and stand in her old position. The pulse, respirations, and temperature were little disturbed.

I left some medicine to be given if pain did not abate, and went home.

On visiting the animal the next morning I was astonished to learn that she was dead.

The attendant said that early in the morning, on attempting to give the mare a dose of the medicine, they heard, on elevating the head, a "dull snap": an hour afterwards the mare

died. The pain was never very severe, or, at least, there was more manifestation of collapse or great depression rather than pain.

Post-mortem.—On opening the abdomen the stomach was found to be ruptured, and its contents were scattered over the other viscera. The third portion of the colon was found to have undergone an almost complete twist, and was bound by a ring of mesentery in which the twisted portion was strangulated.

The intestines were greatly congested and the contents were semi-fluid, dark red in colour. There had been hæmorrhages into the bowel.

CALF IN THE RECTUM.

SENT for to see a cow, as her time was up and she did not seem to be all right.

On entering the byre, I was not long in finding out that there was a decomposing placenta.

After carefully disinfecting and greasing my arm, I introduced it into the vagina and uterus, found and removed an extremely fetid placenta, but could find no trace of the calf. No one had seen the cow calve, and as she seemed very full, I suspected that there might be a calf in the abdomen and a ruptured uterus.

I turned the cow on to her back, but could not, after the most careful search per vaginam, discover the missing fœtus.

I now made a rectal examination, and found the two fore-legs of the calf in this cavity. On making slight traction the hoofs came off.

As the case was evidently a hopeless one, the cow was killed, and, on making a post-mortem, a large rupture was found in the superior part of the uterus, and one in the floor of the rectum.

The head of the fœtus was turned back on to its shoulder, thus presenting an obstacle to delivery, and the throes of the mother must have been sufficient to determine the tear in the uterine and rectal wall, the protrusion of the calf into this viscus, or, at any rate, partly into it.

LONG LABOUR IN A BITCH.

ON March 31st last, she had three live and healthy pups, the mother and offspring doing well. Two days later the bitch

began to strain again, and appeared to be wanting to pup, and I was sent for.

On my arrival I found a dead fœtus in the vagina, and removed it by forceps.

On external manipulation, at least one other fœtus could be felt in the uterus, but all pains had ceased.

The bitch was now taken ten miles to my surgery. At four p.m. one drachm of fluid extract of ergot was given. In four hours strong labour pains came on, and I was soon able to deliver a live pup.

As another fœtus could still be felt on external examination, the fluid extract of ergot was repeated at 10 p.m. Some slight contractions followed, but the fœtus could not be reached. At two a.m. the next morning, the ergot was again administered, and the uterus washed out with a large quantity of solution of perchloride of mercury (1 in 4,000). At 10 a.m. the pup was in the vagina, and was removed by forceps.

No further treatment was necessary, the bitch making an excellent recovery.

Army Veterinary Department.

THE Annual Dinner of the Army Veterinary Department was held in the Whitehall Rooms, Hotel Metropole, on the 24th May, when the following officers were present:—Vet.-Colonel F. Duck, C.B., Director-General; Dr. Fleming, C.B.; Vet.-Colonel J. D. Lambert, C.B.; Vet. Lieut.-Colonels W. B. Walters, C.B., G. A. Oliphant, J. C. Berne, G. Durrant; Vet.-Majors J. J. Philips, J. Burton, W. B. Spooner, S. Duff Gillespie, A. Bostock, J. Flintoff, W. A. Crow, D. C. Pallin, J. A. Nunn, C.I.E., D.S.O.; Vet.-Captains A. A. Jones, W. R. Hagger, T. A. Killick, G. H. Fenton, E. Day, F. J. Short, E. H. Kelly, C. E. Nuthall, T. Marriott, J. A. Meredith; Vet.-Lieuts. F. B. Drage, J. H. Jackson, E. W. Larnder, J. Moore, J. Laughlin, C. B. M. Harris, E. Wilkinson, T. G. Peacocke, H. P. Turnbull, R. C. Moore, D. Bolton, J. A. B. McGowan, E. B. Bartlett, R. C. Cochrane, J. B. Southey, A. G. Todd; Vet.-Surgeon (1st Class) H. Dawson, and Professor McFadyean.

Colonel F. Duck, C.B., Director-General, Army Veterinary Department, was one of the guests at the dinner given by the Secretary of State for War in honour of H.M. Birthday.

Vet.-Major J. Matthews has been promoted Vet.-Lieut.-Colonel, vice Vet.-Lieut.-Colonel J. C. Dwyer, retired.

The undermentioned officers arrived in England on leave of absence:—Vet.-Major F. F. Crawford, from India; Vet.-Capt. H. T. W. Mann, from India; Vet.-Capt. H. T. Pease, from India; Vet.-Lieut. T. E. W. Lewis, from Egypt; Vet.-Lieut. T. G. Peacocke, from India.

Vet.-Lieut. H. P. Turnbull arrived from India, having completed tour of service in that country.

Vet.-Lieut.-Colonel B. L. Glover has been granted a "Companion of the Bath" for his services in the late Frontier War, India.

Extract from *London Gazette*, 1st April, 1898:—"1st Life Guards: Vet.-Major J. D. Edwards retires on retired pay. Dated 2nd April, 1898.

"Army Veterinary Department: Vet.-Captain E. H. Kelly retires from the service, receiving a gratuity. Dated 2nd April, 1898.

A. G. Todd, Gent., to be Vet.-Lieut. in succession to Vet.-Captain E. H. Kelly. Dated 2nd April, 1898."

Arrivals.—Vet.-Lieut.-Colonel E. Ewing arrived from India on 29th ultimo, on retirement from the service. Vet.-Captain S. M. Smith, and Vet.-Lieut. C. B. M. Harris arrived from India on 29th ultimo, having completed tour of service in that country.

Vet.-Lieuts. R. C. Cochrane and J. B. Southey joined for duty at Aldershot 1st instant.

Vet.-Captain S. M. Smith arrived at Aldershot for duty on 15th instant.

Vet.-Lieut. C. B. M. Harris arrived at Shorncliffe for duty with 3rd Hussars on above date.

Vet.-Lieut. R. L. Cranford arrived in England on 16th instant from India, having completed tour of service in that country.

Extract from *London Gazette*, 12th April, 1898:—"Vet.-Major B. A. W. Powell retires on retired pay. Dated 13th April, 1898."

Vet.-Lieut. R. L. Cranford joined at Dublin for duty with 13th Hussars, 4th instant.

Vet.-Lieut. A. G. Todd arrived at Aldershot for duty on 2nd instant.

Vet.-Lieut. H. J. Axe embarked for India, 6th instant, for a tour of service in that country.

Vet.-Lieut. H. Cogan Harris embarked for India on above date on return from sick leave of absence.

Editorial.

THE ROYAL COMMISSION ON TUBERCULOSIS.

THE members of the veterinary profession will doubtless all have made themselves acquainted with the Report of this Commission before now. I proceed upon this assumption, and after summarising the Report will venture to offer a few words of criticism upon it, and a few words of respectful advice and warning to my professional brethren.

One of the salient points of the Report is the importance which the Commissioners all through attach to the use of tuberculin. If any doubts lingered in the minds of the more conservative amongst my colleagues before the publication of the Report, they must now be dispelled. Professor McFadyean sums this matter up as follows :—

> No person, whether he were a layman or a veterinary surgeon, when summoned to look at an animal suspected of showing symptoms of tuberculosis, could give an opinion that was really of much value in the great majority of cases unless he used tuberculin. We have all recognised that within recent years. If the animal is in the very last stage of the disease one may make a diagnosis that has little chance of error, but in the great majority of cases it is only a guess. With tuberculin it is practically a certainty. I should like, if I am not going too fully into that, to give evidence regarding the reliability of tuberculin as a test. I made a number of experiments on that, and reported them to the previous Royal Commission. These, however, were not entirely favourable to the use of tuberculin, because in a considerable proportion of cases the indication afforded by the tuberculin was wrong. But since that, experiments and observations made in somewhat different circumstances have yielded entirely different results, and I have the most implicit faith in tuberculin as a test for tuberculosis, when it is used on animals standing in their own premises, and undisturbed. It is not a reliable test when used on cattle in a market, or on any cattle that have been shipped. or trained, or otherwise excited.

This statement of Professor McFadyean's (which is supported to its full extent by the experiments of Professor Bang) is taken as the key-note of the Report. The Commissioners say : —

> We entirely accept these conclusions, and entertain no doubt as to the value of tuberculin, provided the test is applied by a competent veterinary surgeon, and that the tuberculin is of a trustworthy quality.

This is most gratifying to our profession and puts, as it were, a mint-mark upon us.

On the subject of meat-inspection the Report speaks out very distinctly. The Commissioners give no uncertain sound ; indeed, they do not hesitate to castigate unmercifully the ignorance, obtuseness, and, probably, greed displayed by local

sanitary authorities in making these appointments. Let me recall a sentence or two.

There is a total absence of uniformity in the special qualifications required of the persons employed as meat inspectors by the sanitary authorities in different places, as may be seen by a Return presented to the House of Commons in 1896, showing the previous vocations of those acting in that capacity. In Battersea, for instance, four plumbers and three carpenters discharge the office of meat inspector; in Hackney the duties have been committed to two plumbers, one carpenter, one compositor, one bricklayer, one florist, one builder, one surveyor, and one stonemason. In Portsmouth a solitary butcher has received as colleagues three school teachers, one medical dispenser, one carpenter, and one tram conductor.

If this extract had not been taken verbatim from a sober and dignified Report, one might have supposed it to be a funny paragraph from *Punch*. But things are not so bad as this everywhere.

In Manchester, the public slaughter-houses are under supervision of a veterinary surgeon; in Glasgow, inspection is carried out by the police, assisted by three butchers, and in Liverpool, the staff of inspectors have been "butchers by trade and training."

We may add that in the Edinburgh public slaughter-house we witnessed meat inspection carried on more nearly on the enlightened system of the best continental abattoirs than it was our fortune to see in any other part of the United Kingdom. Here there are six meat inspectors, of whom four are veterinary surgeons, one has been a butcher, and one a cattle salesman. We were very favourably impressed with the organisation, though the standard by which the meat of tuberculous carcases was judged appeared to us unnecessarily severe.

The following paragraph is of importance and merits consideration. Reference is made to it again in the Recommendations of the Commissioners at the end of the Report:—

A number of witnesses expressed the opinion that veterinary inspectors alone should be employed. On this question we are satisfied that some pathological training is the proper basis upon which to build the knowledge required by a meat inspector, and that, wherever practicable, veterinary surgeons, thus educated, should be employed as meat inspectors. In large towns, where a staff of inspectors is maintained, we do not think it necessary that all of these should be veterinary surgeons, but all meat inspectors should pass an examination and receive a qualifying certificate from a central authority before appointment.

The kernel of the Report may be said to be contained in the following paragraphs:—

22. As to the amount and distribution of tubercular disease which justifies the seizure and condemnation of a carcase as unfit for human food, the widest discrepancy prevails in opinion and practice. Chaos is the only word to express the absence of system in the inspection and seizure of tuberculous

meat, and it has, in our opinion, become necessary that regulations should be formulated for the guidance of those who are concerned in dealing with this subject.

In Belfast the presence of tuberculosis in any degree is held to be ground for seizure; on the other hand, in Islington, the veterinary inspector of the Corporation of the city of London only seizes those carcases wherein tuberculosis is generalised and the meat in poor condition. In Dublin, the medical officer of health used to seize on the slightest evidence of tuberculosis, but he has recently modified his views, and only seizes carcases which are somewhat extensively affected. In Sheffield, seizure is made of a carcase showing the slightest trace of tuberculosis; in Manchester, in cases where the disease is localised, the affected part is removed and destroyed, the remainder is passed.

Numerous instances of similar discrepancy will be found in the evidence; the above, taken almost at random, may be sufficient to illustrate the present condition of inspection applied to tuberculous carcases.

23. The evils arising from this want of uniformity are manifold. The stringency of inspection in Belfast, for example, drives butchers away from the public slaughter-house within the city to the private ones without the city, where the inspection is lenient, or altogether wanting. The carcases are afterwards brought into the town, the offal and any diseased organs having been removed, and thus the precautions which the corporation authorities consider it necessary to take against danger arising from the meat of even slightly tuberculous animals are frustrated.

Entertaining, as we do, the strongest opinion in favour of public over private slaughter-house, we cannot but recognise in the present arbitrary system of seizure the surest discouragement to the use of public ones. Butchers will seek relief from inspection which they consider unduly strict by using private slaughter-houses where inspection is either more lenient, or, as in most cases, wanting altogether.

Very strong representations were laid before us on the part of butchers and meat traders, and also on behalf of the agriculturists who supply the butchers, as to the effect of this want of uniformity upon their business.

Of the dead meat imported, the greater part is not inspected till it reaches a public meat market, without the offal and internal organs; and that which is consigned to private establishments generally escapes inspection altogether.

In order to remedy this inequality, and the risk arising from it, we are of opinion that arrangements should be insisted on whereby each animal slaughtered at the port of landing shall be inspected *together with its own offal;* and further, that "stripping" the pleura of a carcase should be taken as evidence of unsoundness, and be followed by seizure.

We feel that we should be exceeding the limits of our reference were we to dwell on the manifest disadvantage which the home producer suffers in having to submit his carcases to a more stringent and extensive inspection than the foreigner is exposed to. But this much is clear from the evidence, first, that tuberculosis exists among imported cattle and carcases; second, that if the rigidity of inspection to which British meat is subjected in some places be justified by the existence of danger therefrom to the consumer, similar danger from imported meat is not provided against under the present unequal system.

25. The question then arises—Has such a stage of experience and knowledge been attained, as to the nature of tuberculosis and the effect of tuberculous meat upon the human consumer, as to enable a uniform standard to be prescribed for the guidance of meat inspectors?

We believe that such a stage has been attained.

Assuming that seizure of meat should be strictly confined to such as is

dangerous to human health, we entertain no doubt that in certain places a great deal of meat is seized which is perfectly safe and wholesome food.

When, some years ago, tuberculosis in human beings and other animals was first proved to be interchangeable, we think that an exaggerated view was taken of the extent of the danger arising from meat, and that this view is still acted on in certain places. Undoubtedly we are not prepared to recommend that indiscriminate traffic in tuberculous meat should be permitted, or that inspection should be more lax than it is at present. On the contrary, we strongly urge that inspection should not only be more general and systematic, but that all inspectors should be qualified by special training. We hold, however, that it should be conducted on better defined principles, and that some limit should be observed in the latitude permitted to medical or veterinary officers in fixing independent standards of soundness in different places.

Next comes the vital question of milk inspection :—

41. It will be seen how futile are the restrictions on the sale of tuberculous milk produced within a city, in the absence of any safeguard against its introduction from outside. Clearly there is the most urgent necessity for powers being conferred on and exercised by local authorities to make periodical inspection of all cows of which the milk is offered for sale within their districts. Such inspection would obviously be best made by veterinary surgeons, but we see difficulty in proposing the employment of inspectors of this class at all stages of the necessary inspections. We are, however, of opinion that no action beyond a suspension of the milk supply from an individual cow, for a period not to exceed forty-eight hours, should be taken, unless authorised under the certificate of a veterinary inspector, and that power to order even this temporary suspension should be restricted to a medical officer of health, and should be based on a personal inspection of the cow in question.

Finally we have the recommendations of the Commissioners, which are preceded by an interesting note, as follows :—

The recommendation on this subject, which we shall place at the close of this Report, will be much on the lines of the resolutions passed at the International Veterinary Congress held at Berne in 1896. We bear in view the remarkable returns of the results of rigid but discriminating inspection in 29 towns in Saxony during the year 1895. Meat inspectors at the public abattoirs in these towns are all qualified veterinary surgeons. Tuberculosis was found to exist in 22,758 carcases (being 27·48 per cent. of the whole number slaughtered). The whole of these, according to the practice of some authorities in this country, would have been confiscated and destroyed without compensation. But in Saxony they were dealt with as follows: of the total number of 22,758 carcases showing tuberculous lesions, 21,062, or 92½ per cent., *were passed as fit for food;* 1,256 carcases, or about 5½ per cent., were disposed of in the Freibank as inferior meat, at a fixed cheap rate; and the remainder, 440 carcases, or 2 per cent. of the whole number pronounced tuberculous in a greater or less degree, were condemned as unfit for food and destroyed.

RECOMMENDATIONS.

A.—Slaughter-houses.

11. That in future no cowshed, byre, or shippon, other than those already registered, shall be permitted or registered in urban districts within 100 feet

of any dwelling house; and that the discontinuance of any one already existing shall be ordered on the certificate, either of the medical officer of health that it is injurious to the health of human beings residing near it, or of the veterinary inspector that it is not a place wherein cows ought to be kept for the purpose of milk supply, and that it is incapable of being made so.

B.—Qualifications of Meat Inspectors.

5. We recommend that in future no person be permitted to act as a meat inspector until he has passed a qualifying examination, before such authority as may be prescribed by the Local Government Board (or Board of Agriculture), on the following subjects:—

(*a*) The law of meat inspection, and such bye-laws, regulations, etc., as may be in force at the time he presents himself for examination.
(*b*) The names and situations of the organs of the body.
(*c*) Signs of health and disease in animals destined for food, both when alive and after slaughter.
(*d*) The appearance and character of fresh meat, organs, fat, and blood, and the conditions rendering them, or preparations from them, fit or unfit for human food.

* * * * * *

F.—Elimination of Bovine Tuberculosis.

15. We recommended that funds be placed at the disposal of the Board of Agriculture in England and Scotland, and of the Veterinary Department of the Privy Council in Ireland, for the preparation of commercial tuberculin, and that stockowners be encouraged to test their animals by the offer of a gratuitous supply of tuberculin and the gratuitous services of a veterinary surgeon on certain conditions.

These conditions shall be—

(*a*) That the test be applied by a veterinary surgeon.
(*b*) That tuberculin be supplied only to such owners as will undertake to isolate reacting animals from healthy ones.
(*c*) That the stock to be tested shall be kept under satisfactory sanitary conditions, and more especially that sufficient air-space, ventilation, and light be provided in the buildings occupied by the animals.

I have thus given a condensed version of this exceedingly important Report, picking out those portions which concern the veterinary profession chiefly. It is very desirable to emphasise these points, because, although none of us wishes unduly to magnify his office, we still remember that we have an arduous struggle to maintain our position and to defend ourselves from the attacks of our enemies and the treachery of false friends. It must be admitted that we have as a body received very fair treatment from the Commissioners, that our reputation is raised by their Report, and that we stand, in consequence, more firmly than we did before. And now it behoves us to show ourselves worthy of the trust placed in us, or to be placed in us, by our fellow-countrymen. The

veterinary surgeon must prove to the world his intimate knowledge of the lower animals, and in this he must take care to keep far ahead of his medical competitor. He must further show his acquaintance—not merely theoretical, but practical and clinical—with the diseases that torment domestic animals, more especially with those that are communicable to man, and most of all with the dreadful and all-pervading disease which forms the *raison d'être* of the Report—tuberculosis. He must show that by his knowledge of the conditions of animal life he can, better than all other men, detect the outbreak of tuberculosis, stop its progress by the elimination of the faulty element, and prevent, as far as mortal can, its recurrence. All this implies close and careful study of the nature and constitution of the animals subject to the disease, and of the phenomena of the disease both during life and after death. No doubt veterinary students think they have too much to do already, and they will not hail with anything like delight any addition to their burdens, but to such objections I reply that it is not so much an increase of study as a deepening of it that will be required. Now, this is really no hardship. The trite proverb says, "what is worth knowing, is worth knowing well." Nothing is so destructive to the human intellect as shallowness or superficiality, especially if it be accompanied, as it so often is, by vanity. Let my younger readers be on their guard against dilettantism, and let them strive by the thoroughness of their studies to make its inroads impossible in the veterinary profession.

I am inclined to think that the best course to be followed by the Royal College would be to obtain powers to grant an additional degree to qualified veterinary surgeons. This degree ought to be conferred only after an exhaustive examination on special subjects, such as hygiene, dietetics, diagnosis of disease during life and after death, microscopic and macroscopic chemical knowledge as regards the analysis of air, water, milk, discharges, blood, and, likewise, of feeding-stuffs. Post-graduate courses would, of course, have to be formed at the various colleges, but these could easily be arranged for during the summer months when veterinary men are not busy. The great thing to be remembered is this, we have got a help forward by means of this Report, or, in sporting language, we have got a start; let us try to keep it. Let us conquer the citadel; let us make it impossible for anyone but a veterinary surgeon to hold it.

Proceedings of the Veterinary Medical Societies, etc.

GLASGOW VETERINARY COLLEGE.

THE examination of the Royal College of Veterinary Surgeons took place on Wednesday, 18th, Thursday, 19th, Friday, 20th, and Saturday, 21st May. The Board of Examiners included Messrs. George Fleming, LL.D., F.R.C.V.S.; W. Duguid, F.R.C.V.S.; W. Hunting, F.R.C.V.S.; John Freeman, F.R.C.V.S.; W. Peacock, F.R.C.V.S., M.D., M.R.C.S.; Jas. Clark, F.R.C.V.S.; F. Smith, F.R.C.V.S.; Wm. Pallin, F.R.C.V.S.; J. R. Green, Sc.D., F.R.S.; W. Woods, F.R.C.V.S.; T. B. Goodall, F.R.C.V.S.; W. H. Bloze, F.R.C.V.S.; H. Somerville, B.Sc., F.C.S.; W. B. Walters, C.B., F.R.C V.S.; J. B. Haycraft, M.D.; Robert Muir, M.D. G. S. Cartwright Wood, M.D.; Robert Moore, F.R.C.V.S.; Wm. Wilson, F.R.C.V.S.; John Malcolm, F.R.C.V.S.; Harry Oliver, F.R.C.V.S. There were also present as ex-officio members:—Principal M'Call, F.R.C.V.S.; Professors William Limont, M.A., M.B., F.F.P.S.G.; James M'Intosh M'Call, M.B., C.M., M.R.C.V.S.; J. W. Cameron, M.B., C.M., D.P.H.; James Murphy, F.Z.S.; T. S. Goodwin, F.C.S.; G. F. Scott Elliott, M.A., B.Sc., F.L.S.; John Raphael M'Call, M.R.C.V.S.; and Robert Dobbie, secretary. The following students passed the A or first professional examination:—Messrs. A. P. Logan, Ballyclare, co. Antrim; Albert M'Dowell, Ballynahinch, co. Down, with honours. W. H. Edwards, Carnarvon, with honours; J. H. Lyons, Ardara, co. Donegal; Archibald Logan, Glasgow; J. H. M'Laren, Shawlands, Glasgow; W. M. Ferguson, Glasgow; Colin C. Must, Glasgow.

The following students passed the B or second professional examination (four years' course)—W. G. H. Barber, Holmfirth, Yorks; W. G. Forbes, Old Kilpatrick.

The following students passed the C or third professional examination (three years' course)—D. Jack, Helensburgh; W. Neilson, Helensburgh; Jas. G. Reynard, Uddingston; R. Spittal, Pollokshields; Frank Waddington, Bishop Auckland, co. Durham.

The following students passed the C or third professional examination (four years' course)—P. M'Kinlay, Alexandria, Dumbartonshire; W. Watson, Pontyfrass, County Armagh; R. Porteous, Ayr; J. J. Aitken, Kingston, co. Dublin; J. Montgomerie, Rothesay; H. W. L. Fernandez, London.

The following students passed the D or final examination (four years' course), and obtained the diplomas of the Royal College of Veterinary Surgeons—Messrs. J. Irvine Smith, Kilbirnie (with honours); Jas. C. Erskine, Bridge of Weir; John Crawford, Beith; A. Fraser, Largs; David Scott Weir, Milngavie; Robert Griffith Jones, Rhuddlan, Flintshire; Wm. Crawford, Beith (honours).

The following students passed the second or practical portion of the C examination (three years' course), and received the diplomas of the Royal College of Veterinary Surgeons:—Messrs. Frank Waddington, Bishop Auckland, co. Durham; D. Jack, Helensburgh; Jas. G. Reynard, Uddingston; W. Neilson, Helensburgh.

Medals granted by the Highland and Agricultural Society, the late Professor Allen Thompson, of London, and Principal M'Call, and certificates of merit were awarded in the different branches of study as follows:—*Medicine, Surgery, and Obstetrics* (*Horse*), Written Examination—Silver medal, H. Oliver; first class certificates, A. Fraser, John Crawford, and D. S. Weir; second class certificate, R. G. Jones, R. H. Johnston, and J. G. Reynard. *Medicine, Surgery, and Obstetrics* (*Cattle*), Written Examination—Silver medal, James Irvine Smith; first class certificates, H. Oliver, R. G.

Jones, and D. S. Weir; second class certificates, A. Fraser, J. Crawford, and W. Crawford. *Materia Medica and Therapeutics*—Silver medal, W. Watson; first class certificate, P. M'Kinlay; second class certificates, D. M'Hattie, J. Montgomerie, and R. Spittal. *Pathology and Bacteriology*—Silver medal, W. Watson; first class certificates, P. M'Kinlay and W. Neilson; second class certificates, James Montgomerie, R. Spittal, and R. Porteus. *Veterinary Hygiene and Dietetics*—Silver medal, W. Watson; first class certificate, D. M'Hattie; second class certificate, R. Porteous. *Parasitology*—Silver medal, James Irvine Smith; first class certificates, H. Oliver, R. G. Jones, R. H. Johnston, and John Crawford; second class certificates, Archibald Fraser and James C. Erskine. *Zoology*—Silver medal, W. H. Edwards; first class certificates, W. H. Edwards, W. M. Ferguson, J. H. M'Laren, and J. S. S. Woodrow; second class certificates, William Gray, Archibald Logan, Albert M'Dowell, and A. F. Borthwick. *Junior Anatomy*—Silver medal, W. M. Ferguson; first class certificates, W. H. Edwards and J. H. Lyons; second class certificates, Archibald Logan and W. Gray. *Senior Anatomy*—Silver medal, J. Allan; first class certificate, W. G. Forbes; second class certificates, A. W. Spittal and F. P. Beck. *Physiology*—Silver medal, W. G. Forbes; first class certificates, F. P. Beck and J. Allan; second class certificate, Thomas Price. *Chemistry*—Silver medal, William Gray; first class certificates, J. H. M'Laren and W. M. Ferguson; second class certificates, W. H. Edwards, Archibald Logan, and J. S. S. Woodrow. *Botany*—Silver medal, W. H. Edwards; first class certificates, A. P. Logan and William Gray; second class certificate, J. H. M'Laren. *Best Professional Examination in Veterinary Medicine before the Board of Examiners*—Gold medal by Principal M'Call, James Irvine Smith, and honours. *Best Professional Examination in Veterinary Surgery before the Board of Examiners*—Gold medal by Principal M'Call, W. Crawford. *Best Professional Examination in Anatomy*—Gold medal by the late Dr. Allen Thomson, G. H. Barber.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE spring meeting was held at the Queen's Hotel on Friday, April 29th, Mr. W. F. Greenhalgh (Leeds) presiding.

THE SERUM TREATMENT OF TETANUS.

BY S. WHARAM, M.R.C.V.S., LEEDS.

Mr. Wharam said he had no doubt they were anything but unanimous as to either the curative or protective qualities of the anti-tetanic serum; but sufficient time had elapsed for the majority of them to have had experience of its use; and, though their opinions might not coincide, an interchange of ideas would be beneficial.

Idiopathic tetanus, he proceeded to say, did not now exist. Tetanus was caused by the toxic products of the tetanus bacillus, which was found outside the body, chiefly amongst dead leaves, garden soil, etc.; and, therefore, if it was not for antiseptic precautions, and the part played by leucocytes and pyogenic organisms in comparatively healthy wounds, tetanus would be a common disease.

As to treatment he advised absolute quiet, dark box, short bedding, peat moss litter if possible, sloppy nourishing food, and, in some cases, slings, with a hypodermic injection of anti-tetanic serum every 24 hours. In some instances he had also given a moderate dose of aloes at the outset with good results. He advised, further, that a thorough examination for wounds should be made; these, if any, should be thoroughly cleansed with a reliable antiseptic, and in foot cases he had used poultices in addition.

Instancing the method of obtaining the serum, Mr. Wharam said filtered cultures of the tetanus bacillus, which contained a tetanising poison, were injected into a horse, and, beginning with small doses, horses could be so accustomed to it that enormous doses could be injected without harm. Anti-tetanic serum was the blood serum obtained from a horse that had been rendered immune by repeated injections as he had described.

Mr. Wharam then gave particulars of five cases of tetanus which he had attended during the last six months, two having recovered, one having died, and two being then under treatment.

The first case was that of a valuable bay hunting colt, 4½ years old, in good condition, which was noticed to be very stiff and standing alone after being out at grass during the day. While giving the animal a physic ball he found a wound about two inches long on the tongue; this he scraped with a knife and cauterised with nitrate of silver. Putting the horse in a loose box, he injected 2½ drams of serum, and after treatment had been continued it was finally discharged cured 15 days later.

In the second case a brown cob, aged, 14·2 high, was affected, the animal having been very stiff for two days and off its feed. When first seen it was sweating, severe spasms affecting the muscles of the neck and mastication (trismus), much saliva running from the mouth; both the tail and head were elevated, and the membrana nictitans was protruding over the cornea. There was a suppurating setfast on the near side, which was scraped and washed with bichloride of mercury and dusted over with a little iodoform and boracic acid. Owing to the excitable condition of the cob whilst the first dose (2½ drams) of serum was being injected it was decided to use slings. On subsequent days there was a slight improvement, but on the fourth day the animal got out of the slings and was down, sweating, in a most excitable condition. As the stable was of wood and the slings were not properly adjusted the owner was told it was of no use to continue the treatment; and next he heard of it was that it had been walked half a mile to another stable. The cob died nine days after it was first seen, the owner expressing his belief that if he had had a proper place in which to sling the animal he would have recovered.

In the third case a bay horse, eight years old, which had been used for carting, was treated. The horse, it seems, was put to work after being poulticed for a gathered nail in the near hind foot, and after three or four days it was reported to be very stiff and suffering from hamond. It was put loosely into slings, given six dram balls, and, after the shoe had been removed, bichloride of mercury was applied to the wound, followed by a linseed poultice. Serum was injected, and the animal improved gradually without further treatment.

Mr. Wharam next cited the case of a bay entire colt, one year old, which he successfully treated after the manner of the previous cases; and in the case of a black 'bus mare, six years old, he had no doubt recovery would also follow the treatment.

Mr. Wharam mentioned that all the cases he had described were separated from each other by several miles, the places at which they occurred being Lofthouse (near Wakeford), Scarcroft, Chapeltown, and the city of Leeds; and proceeded to say, that although his experience of the anti-tetanic serum was satisfactory, the conditions under which the patient was placed at the onset of the attack and during treatment played an important part. In cases 2 and 4 the conditions were decidedly bad, whereas in cases 1, 3, and 5 they were all that could be desired.

Discussion.

In inviting discussion the CHAIRMAN remarked they all knew what a fatal disease tetanus was. He agreed with Mr. Wharam that the conditions under

which the patients were placed were more important than any medicines that could be given.

Mr. BOWMAN instanced two cases which he had treated. He put them in dark boxes, kept them as quiet as possible, and only let one man attend them. But he never knew any good come from putting colts in slings.

Mr. ABSON said he had had some little experience of anti-tetanic serum, and he must confess that up to the present the favourable results from the treatment, and the favourable results from cases in which he had not used the serum, were about equal. He was a little bit sceptical yet as to the *bonâ fides* of anti-tetanic serum, but, of course, experience would teach them. He invariably put all cases of tetanus in slings—harness horses always; but he did not agree with this course where young stock, especially colts, were concerned, because they resented any interference of that sort. Two years ago he had five cases of tetanus in succession; all got better, and he concluded he was on the right path with his treatment. He was sorry to say that the next five animals he treated for the same disease all died. There was no question about good surroundings conducing to recovery; quietude, a healthy loose box, and one attendant only would give the animal a better chance of recovery than if it were being constantly interfered with. But he could not see what a dose of physic could do in a case of tetanus; one effect of it would be to deplete the animal, which would in the course of time become depleted enough. He had given a dose of physic, and he had not been at all pleased with the result. The treatment he had found to answer best was chloral, given in pretty large doses in the sloppy mess which the animal took. There was something in regard to bedding. He had a notion that moss litter harboured the tetanus bacillus more than any other bedding; he had certainly had a lot of cases of tetanus which had been standing on moss litter.

Mr. COOKE said one drawback in connection with the use of the serum was that they could not keep it by them. The serum was supposed to lose its effect after a while, and when he sent for it on the Saturday he did not get it until the Tuesday. Mr. Cooke said he had four cases last year, two being colts under six months. In one case he used serum which he had had by him five months, and the animal died; another case, in which he used fresh serum, also terminated fatally. He had used it, too, in connection with two horses, and they both recovered, but he did not attribute it altogether to the serum, but to his usual treatment. This was to place the patient in slings, keep it in dark and quiet quarters—and he thought it of advantage to put cotton wool in the ears—and to administer suppositories of atropia and morphia.

Mr. BOWES: I have had some cases and tried the serum, and they have all died. I have not found it a success.

Mr. CLARKSON said he had very grave doubts as to the utility of the serum; he had not been more successful with it than he had been with the ordinary treatment. His ordinary treatment was to give belladonna and chloral hydrate, the two combined, and his experience was that where tetanus attacked the horse at rest or the colt running about, it never seemed to be quite as bad as the horse that was being worked and the ones found to be stiff; the latter case, his experience taught him, was going to be a fatal one. Hitherto a dose of physic had been a thing he immediately gave, and Mr. Clarkson went on to say that the usefulness of the society would be increased if they made it the distributing medium for things of this sort. With regard to bedding, he agreed with Mr. Abson that it was not desirable to use a peat moss litter, and particularly when the animal had wounds on the foot. He preferred straw cut into quite short lengths. It had been mentioned that there was a lot of tetanus in spring; he did not know whether it had any-

thing to do with it or not, but some years ago, before the germ theory was put before them, it was said the sea air had a lot to do with tetanus.

Mr. SCRIVEN said he had not been successful with the serum. He had always thought there was most bacilli found in the fæces, and these ought to be eliminated from the subject. He had treated his cases with belladonna, and not given them any medicine at all, but he had never been an advocate of peat moss litter. As Mr. Wharam had said in his opening remarks, the bacilli were found in decayed leaves, and where could they find more than in dead moss. He had never used slings, for he thought they caused the animal more irritation than anything else. He had preferred to put them in a dark box and allow them to wander about in some chopped straw.

Mr. MCCARMICK said he had used the serum on two different occasions; one animal got better, and the other died.

Mr. ATCHERLEY thought the lives of many animals were saved by putting them in slings.

Mr. ABSON: We may use slings or do as we like, but if we have not the horse of proper temperament it will not get better.

Mr. BOWMAN said he had had cases of tetanus many a time in which the horses had laid down and got up many a time. He had 200 horses standing on peat moss in one place, and he had only had one case of tetanus in five years.

Mr. BOWMAN said he had saved many horses by putting them in slings. Instancing one case of tetanus he had attended at Washington, the speaker said he had administered hydrate of chloral and belladonna, with chop about once a week, and as much quietness as could be ensured. That came out all right.

Mr. ROBINSON advised bromide of potassium and prussic acid in cases of tetanus.

Mr. MASON said this was one of the diseases to which horses were subject which had been experimentalised upon more than any other. Nearly the whole British Pharmacopœia had been poured down the poor animal's throat. In his experience he had used a certain drug and thought that at last he had a sheet anchor. In the next two or three cases he used the same thing, and the patients died. He had had no experience of the serum, bnt it seemed to be more efficacious than the old-fashioned treatment of hydrate and belladonna, or Scheele's prussic acid. In a severe case of tetanus he did not think they could do without slings. With regard to the peat moss, of which a large quantity was used at the present time in large stables, there would be more cases of tetanus if the litter harboured the tetanus bacillus.

Mr. WHARAM, in reply, said his idea of using peat moss was that he believed it was taken from moors and places where the tetanus bacilli would not be present. Further, he had had experience in large stables where peat moss litter was used and which were absolutely free from tetanus. The surroundings of the patient, he repeated, were everything; and as regarded slings, he had found that in acute cases if the horse, and especially if it was an aged one, got down, he usually died; in fact, in many instances he had ordered them to be slaughtered as not worth further attention.

After a few remarks from the Chairman, on the proposition of Mr. SCRIVEN, seconded by Mr. MASON, a hearty vote of thanks was accorded to Mr. Wharam for his paper.

THE MICROSCOPE AS AN AID TO DIAGNOSIS IN VETERINARY PRACTICE.

BY H. G. BOWES, M.R.C.V.S., LEEDS.

Mr. BOWES said the microscope did not appear to meet with the recognition amongst veterinary surgeons which it merited, some looking upon it as an

unnecessary and superfluous article, while others did not find much time for scientific work and let their microscope fall into disuse. Dwelling upon the advantages following the use of the instrument he did not suggest every veterinary surgeon should be an expert microscopist, but a good workable knowledge of the subject was desirable—sufficient to enable him to recognise the more common pathological appearance of the tissues and organs of the body, and also the common parasites and specific organisms which were the causes of some of the contagious diseases. We should also be able to prepare specimens, either of fluids or of tissues for examination. For this purpose a small Cathcart's microtome, in which ether was a freezing agent, was quite good enough: it had the advantage of being easily manipulated and reasonable in price. The microscope was of direct use in aiding them to diagnose certain diseases with a greater certainty than by other means, and, indirectly, by general microscopic study which would enable them to observe the changes effected in the various tissues and organs under certain conditions of disease. In some diseases, such as parasitic skin diseases, it aided the diagnosis during the life of the patient; in others, most important of which perhaps was anthrax, it was invaluable in investigating the disease when the animal had died.

He referred particularly to anthrax, because in his opinion a careful microscopic examination of a drop of blood, from a case of suspected anthrax, was far more reliable than the most careful *post-mortem* examination, for with the latter there was always a chance of mistakes occurring owing to the possibility of the *post-mortem* appearances being indefinite or varying. The microscope readily revealed the presence of bacillus anthracis, with which they were all familiar—a bacillus which was of comparatively large size and easily distinguishable even with only a moderatively high magnifying power. Briefly pointing out that the method of preparing specimens of blood for examination for anthrax was to obtain a thin film of the blood on a cover glass stained with methyl-blue, mounted in Farrant's medium of Canada balsam, so that the rod-like bacilli were easily distinguished, Mr. Bowes urged that another great advantage was that the use of the microscope did away with any danger in making *post-mortem* examinations, it being possible to draw a little blood from under the skin without opening the carcase. Two instances in which mistakes were made by the ordinary methods of *post-mortem* examination had come under his personal observation. In the one case death was attributed to anthrax when it was due to other causes, and in the other it was attributed to other causes when it was due to anthrax. In each case the mistake was revealed by means of the microscope. In the first instance several cattle, part of a large number running out in a large park, died in the early part of the winter; it was a very cold, bleak time, and the food was scanty and very hard and dry. The veterinary surgeon, with whom he was then assistant, made a *post-mortem* examination, and finding the stomachs very much inflamed and impacted with the hard dry food, gave the cause of death as inflammation of the stomach. Another surgeon, called in by the police, certified that the loss was due to anthrax, but when the blood was examined microscopically no trace of bacillus could be found, and that view was strengthened by the fact that several other cattle, which were ailing in the same way, completely recovered upon being treated for the stomachic trouble. In the other case several yearling horses died suddenly, the first being found dead and the others dying after illness extending only over a day or two. The most notable feature of the *post-mortem* examination was the large number of worms present in the intestines, and also the presence in the mesenteric region of a tumour involving the mesenteric artery and containing large numbers of the parasite known as the strongylus armatus. The

other cases were under treatment until death; these exhibited most marked symptoms of pleurisy with hydrothorax, and on *post-mortem* examination the thorax was found to contain a large quantity of septic fluid, the pleuritic condition being so marked as to quite account for death, without looking for any further cause. Any question as to it being anthrax was dismissed as not being supported by any of the *post-mortem* lesions. He was led, however, on going to make a *post-mortem* on the third one, to take his microscope with him. A third gentleman, an F.R.C.V.S., was in attendance, as the subjects were valuable yearlings, and the latter said, in view of the lesion in the thorax being so marked, that he could not see anything in the least suspicious of anthrax. Meanwhile, he (Mr. Bowes) had drawn a little blood, the anthrax bacilli were found present in large numbers, and this was accepted as convincing. In some medical books he frequently found that the pleuritic condition was a common accompaniment of anthrax in the human being. Of other specific diseases they had tuberculosis, in which, by careful examination, the bacillus was fairly easily found. Of course, it would not help them much in diagnosing an ordinary case of tuberculosis as affecting cattle during life; besides, they had a much readier method now in inoculation with tuberculin. But there might be circumstances under which the microscopical examination of pus, taken from supposed tubercular nodules after death, might be of great value in determining whether it was actually tuberculosis or not—especially where a law case might be pending.

The search for the micro-organisms causing tetanus and glanders might be instructive and interesting, but he would not like to suggest that a microscopic examination in these cases would aid diagnosis. He had not looked for the glanders bacillus, but so far as his experience of the tetanus micro-organisms went, he was afraid the patient would be dead long before the cause of the disease was discovered. He might add that he was still looking for it; he had seen it, but not from preparations of his own. Actinomycosis was a disease which was not commonly met with now, but it was one which, in the past, was often mistaken for tuberculosis, the enlargements being taken for tubercular swellings. In a case of this kind the microscope would soon settle any doubt, the ray fungus being very readily distinguished by that means. In some diseases of the urinary organs, in which epithelial casts or crystals of various substances might be present in the urine, a microscopical examination would determine their presence.

In parasitic diseases, both internal and external, the microscope was also useful in determining the parasite which was causing the trouble. In early stages of parasitic bronchitis in calves and sheep, there might not be any fully developed strongyles to be seen in the mucus discharged from the nostrils, but, if their presence was suspected, a microscopic examination would settle it. In cases of skin disease there might sometimes be a doubt as to whether they were parasitic or not, but a microscopic examination of the scurf would soon set all doubt at rest. A few years ago he was called in to see some horses suffering from some skin disease which had been under the treatment of the owner for mange for about six months. And, as the disease had extended nearly all over the body, it certainly looked very like mange. On making a microscopic examination, however, of some of the scurf and hair, he was rather surprised to find ringworm was the cause of the trouble, and that the spreading was owing to the length of time it had been going on. Of course, we could generally diagnose mange without the aid of the microscope, but the importance of a correct diagnosis in skin diseases was that one might be treating a case of mange for eczema without taking precautions to prevent it spreading; and so other horses might become affected before the mistake was found out. He remem-

bered a veterinary surgeon, some years ago, giving evidence at the police court on a sheep-scab case, saying he could distinguish the mange mite causing scab by means of the naked eye. That, of course, was absurd, unless he had particularly keen eyesight. The mite was certainly large enough to be seen as a small speck, but it would be impossible to say whether it was a parasite or a bit of epidermis by the naked eye only, whereas it could be immediately recognised by means of a low power microscope.

Mr. BOWES concluded an interesting paper with the hope that the veterinary profession might recognise the advantages of the microscope by giving it more universal use.

After a few appreciative remarks from the CHAIRMAN,

Mr. ABSON congratulated Mr. Bowes upon a paper from which he was sure they would all have learnt a lot. The cases in which the microscope had detected anthrax in horses was especially interesting, because he had never seen a case of anthrax in the horse, and the symptoms of *post-mortem* lesions which he had described were particularly important. Remarking upon anthrax being the bacillus getting entrance to the body by means of oats or maize, the speaker cited an action at law in which the factor who supplied the oats from which the disease was supposed to have sprung was made to refund the value of the animal. At the time this outbreak took place it was not supposed the cases were those of anthrax, but the microscope disclosed the fact—not upon the examination of the blood but of the oats.

Mr. CLARKSON said in regard to anthrax resulting from food he remembered ten or twelve years ago Professor Williams had a similar case in Liverpool.

Mr. BOWMAN mentioned a case of anthrax in a horse which had come under his notice.

Mr. WHARAM said the spleen was the organ generally looked upon as the seat of the disease.

The afternoon's proceedings were then closed with a hearty vote of thanks to Mr. Bowes on the proposition of Mr. SCRIVEN, seconded by Mr. LAZENBY, and supported by Mr. CLARKSON.

The President was accorded a vote of thanks for presiding.

IRISH CENTRAL VETERINARY ASSOCIATION.

THE quarterly meeting was held on Wednesday, 27th April, at the Glentworth Hotel, Limerick. The members of the profession present were Messrs. D. Fulton, Mullingar, President of the association, presiding; A. Watson, Dublin, Secretary; M. J. Cleary, Mullingar; P. J. Howard, Ennis; O. D. Coll, J. M. Christy, A. J. O'Leary, T. Ryan, Peter Johnstone, and E. C. Winter, Limerick; R. C. Bullen. Mallow; Christopher Rea, Clonmel; J. J. Kelly, Kilrush: and J. F. Healy, Midleton.

Veterinary Surgeons and Horse Shows.

Mr. WATSON proposed the following resolutions *en globo*:—

This association protests against conditions relating to the veterinary examination of horses at shows which allow of or tend to encourage exhibitors or other interested outside parties to challenge or appeal against the officially announced veterinary opinion with respect to the soundness of a horse, once that opinion has been issued by the appointed stewards.

This association deprecates the acceptance by veterinary surgeons of appointment at any horse show unless the conditions under which the examination of horses is conducted provide, that once the show executive issues the opinions of the appointed veterinary surgeons, such opinions shall be considered and upheld as final by the executive of the show.

Any system of veterinary examination adopted at horse shows, which invidiously sets the opinion of one appointed veterinary surgeon against that of another—instead of allowing of difference of professional opinion being determined in consultation—militates against the interests of the promoters, besides being unwise, contrary to courtesy, professional etiquette, and derogatory to all parties concerned.

We consider it unfair to private practitioners of the profession that certificates as to the soundness of horses be given by any horse show executive, to owners or other persons unofficially connected with the show.

Mr. CLEARY seconded the propositions.

ABORTION.

BY E. C. WINTER, F.R.C.V.S., LIMERICK.

Mr. President and Gentlemen,—In choosing a subject for this paper, I have endeavoured to find one that would be of interest to the great majority of the members. I do not propose to propound any new or startling theories, or open up any new ground, but rather to provoke a discussion and interchange of opinion which may be of some practical value to us, as country practitioners, in dealing with this great scourge amongst the dairy cattle of our clients.

The amount of money lost annually to dairy farmers and stock raisers by the abortion of their cows is almost incalculable; the former in most cases losing the season's milk from the affected cow, or the greater part of it at least, as aborted cows never milk so well as if they calved normally, and the latter losing the calves for that season, and often the next one as well, and also the services of any bull or bulls who may have served an affected cow, it being well known that the bull is often a fruitful cause of spreading the contagion from cow to cow and herd to herd.

Abortion may occur in any of the domestic mammals, and affects them in about the following order, viz., cattle, pigs, sheep, goats, horses, dogs, and cats. In this paper I propose to confine my remarks chiefly to the bovine tribe.

Abortion may be described as "the premature birth of a dead fœtus," in contradistinction to ordinary cases of premature birth, where the fœtus is born alive, and continues to live; although I am well aware that this definition does not exactly fit every case, as a good many fœtuses in cases of sporadic abortion may be born alive, but they rarely or never live more than a few hours at the most.

Abortion may occur at any period of gestation, but it is most common at what is known as half time. In cattle it generally takes place about the fourth or fifth month, but may occur at any time between the third and seventh month, after which time it rarely or never occurs.

Abortion is now recognised in two distinct forms, the sporadic and the epizootic, or contagious form.

The sporadic form is seen in isolated cases, and is generally due to some accident, whether physical or dietetic, or to constitutional disease in the mother.

The epizootic form is now well known to be contagious, and due to a specific germ.

Galtier, in 1890, claimed to have proved the contagious nature of this disease, and says it exists primarily in the mother, and, secondly, in the fœtus. The old-fashioned theory that existed, and still exists, in a good many parts of this country, that abortion might be brought about by sympathy between pregnant cattle is now exploded, and the cause of its spread traced to the true cause, *i.e.*, contagion. In some districts a superstitious belief exists to the effect that the burying of an aborted fœtus in a neighbour's land would convey the disease from the affected farm on to the neighbouring one, and I

have known a serious case of assault and battery arise out of an attempt to thus transfer the disease to a man's next door neighbour.

Causes.

Sporadic abortion may be due to a variety of causes, such as dietetic errors, violence, sudden fright, or violent excitement, or any debilitating affection or disease which weakens the parent or causes a rise in temperature.

Dietetic errors producing derangement of the bowels, either constipation or diarrhœa may cause abortion, and cows fed on badly-saved hay or frozen roots are likely to abort.

Cases of abortion following the use of ergotised hay or grasses are very rare, at least in this country, and the administration of the drug itself does not always produce the desired effect. I am of opinion that we may leave ergot out of this list as a factor in the production of abortion.

Direct violence, such as kicks from brutal attendants or from horses, being horned by other cattle, or crushed in narrow doorways, or slipping up on smooth floors or ice, are common factors in the production of sporadic cases of this disease.

Fright and excitement have from time to time caused both mares, cows, and ewes to abort, and, in hunting districts, the hunt funds are often called on to make good the losses caused to farmers by the hounds running through their lands and thus causing their in-calf cows, mares in foal, and breeding ewes to abort.

Any disease, such as tubercle, foot-and-mouth disease, and pleuro-pneumonia in cattle, and laminitis, pneumonia, lymphangitis, and allied diseases in mares, may so affect the constitution of the mother as to produce abortion.

Colic in in-foal mares is nearly always followed by abortion.

Having given some of the causes of sporadic abortion, I will now proceed to speak of the epizootic forms, the cause of which may be summed up in one word—contagion.

Although it is difficult to produce abortion artificially by dietetic errors, or the administration of drugs, no such difficulty exists in producing the disease by direct contact of an affected cow with a pregnant one, or even by indirect transmission through a bull that has previously served an affected cow; and an affected cow should not for this reason be put to the bull for a period varying from one to three months after abortion, or until all discharge from the vagina has disappeared and the genital organs have resumed their normal healthy tone. Should this precaution not be adopted, every cow subsequently served that season by the bull is liable to abort and in her turn affect every member of the herd she may be brought into contact with.

The following paragraph, which appeared in *The Live Stock Journal* for the 25th March, ult., bears out what I have just written, and is, I think, worth quoting:—

> On inquiry, I find abortion most rife in this part of the West of England—speaking south of Devon—and consider it not to be wondered at, so many farmers sell an aborted cow in the open markets and sow the disease broadcast, and we often know of cases where a cow has aborted, and afterwards been driven to a neighbour's bull to try and get another calf. I know of a case where a neighbour of mine bought a cow at a sale, where the whole herd was sold by auction. Nearly all these cows had aborted not long before; and the purchaser, not knowing it, allowed this newly-purchased cow to mix with his cows; a few weeks after four of his cows aborted, all within one week of each other, and they were in calf to four different bulls. Since that he has lost over one hundred calves in this way; and this is only one case out of many. I certainly think there might be some useful legislation on so important a subject.

So says the correspondent of *The Live Stock Journal*, and I think I am sure we are all of us of the same mind on this matter.

The introduction of a cow from an affected herd, whether the cow in question has herself aborted or not, is always fraught with danger; and in cases where no fresh cows have been brought in, the cause of an outbreak might reasonably be looked for in a bull, or bulls, that have served the cattle the previous season.

Cows heavy in calf do not readily abort, even when placed in contact with affected cows, but they are very liable to do so the following season.

Cows having aborted one season and being served again, generally carry their calves for a longer period next season, and finally become immune, that is, if they do not become sterile, as, unfortunately, 50 to 60 per cent. of them do; but should a cow prove in calf for a second or third season, she will resist the action of the virus for the future. Of course, in the case of ordinary dairy cattle, the cows would not be worth retaining for a season or two on this chance, but in the case of pedigree cattle of great value, the fact might be worth remembering.

Cases of abortion have been known to follow the introduction to a stock-yard of a calf only fourteen days premature, and even the introduction of the skin of an aborted fœtus.

In countries where brood mares are kept together in great numbers the contagious character of abortion is well recognised, but in this country the conditions under which they are kept are not favourable to the spread of the disease, each mare being more or less isolated.

Mares generally abort early in pregnancy, and usually the event takes place without the cognisance of the attendants, who notice nothing wrong until the mare begins to lose condition, as they generally do, or until the foaling time approaches. A mare that aborts is usually sterile next season.

Mares carrying twin foals frequently abort, but cows carrying twin calves do not seem to be any more liable than those carrying single ones.

In the case of contagious abortion the virus enters through the vulva and vagina, and propagates between the fœtal membranes and the uterus, and where the contagium has once entered treatment is useless as far as that particular host is concerned.

The bacteria are conveyed through the membranes to the fœtus and their products, and the products of the decomposition of the membranes set up irritation and sever the connection between the fœtal membranes and the uterus, and so favour the expulsion of the fœtus.

Experimentally the disease has been produced by placing a little of the discharge from an affected cow within the vulva of a healthy one, and even by rubbing the fœtal membranes or the skin of the fœtus about the vulva or buttocks of healthy cows. In these cases abortion follows sometimes as early as fourteen days after.

McFadyean and Woodhead have produced abortion in this way in ewes, and have proved that the virus of one species is quite capable of producing the disease in another species.

The insanitary conditions under which cows are kept are largely responsible for the spread of this disease; the cows themselves are never, as a rule, cleaned, and the drainage from one end of the byre generally runs down along all the stalls to the other end, often remaining in pools of filth behind the cows, who get their buttocks and tails soaking with it, and so bring it into direct contact with their vulvas, and things are in this way made very easy for the entrance of the germ, who on his part is not slow to do the rest. In this way one cow in a byre may affect the rest of the inmates. The contamination of the litter and stalls, as well as the hands and clothing of the attendants, are also fruitful sources of the spreading of the contagion, and, as I have before remarked, a bull that has served an affected cow may spread the disease through a whole district. A cow coming from an affected

herd, or having been in contact with an affected animal, may spread the disease, although she may not herself have been affected.

Symptoms.

The symptoms of abortion are somewhat similar to those of approaching parturition, but the indications, as a rule, only show a few days or weeks before delivery, instead of as in normal parturition, coming on gradually for a comparatively long period. In cattle about to abort there is never the same relaxation of the parts about hips and vulva, nor does the udder become as full or hot as in normal parturition. The fœtus is as a rule expelled quickly, and the membranes are usually retained, often for a considerable number of days. The discharges from the vagina are acrid and foul smelling; the fœtus is nearly always born dead, and often assumes a parboiled or macerated appearance, owing to the action of the decomposed uterine fluids. Cows that abort lose their condition, and do not seem to recover their normal state of health for a long time.

As to the precise organism that causes abortion, our knowledge of the subject is still of the very vaguest character, as several organisms have been found by the scientists who have devoted their time to experimenting with cultures obtained from the uterine discharges, and none of those observers have been able to say definitely that they have found *the* particular germ which by inoculation would produce the affection, although all are agreed as to its presence.

Treatment.

No treatment of this affection can avail once the germs have entered the uterus of a cow, and our attention must be directed to the prevention of the disease in the remainder of the herd; this is best accomplished by disinfection and the free use of antiseptics, as well as bestowing attention on the general hygienic surroundings of the herd.

All fœtuses and fœtal membranes, as well as soiled litter, should be burned; cows that have aborted, or appear likely to abort, should be at once isolated, and, in connection with this matter, I may add that any cow purchased should, if the slightest suspicion exists, be also isolated, say for a couple of months.

No attendant that touches an aborted cow should be allowed to have any recourse to the others if at all possible, and, if this is not practicable, the hands and boots of such attendants should be thoroughly cleansed and disinfected after each visit to the affected cow.

The placental membranes are, as a rule, retained after abortion, and should at once be removed and burned. This removal of the membranes is not by any means one of the sweets of the veterinary profession, and apart from the offensive smell, which sometimes will cling to the hands for days at a time, the practitioner runs a serious risk of getting blood-poisoning, and too much caution cannot be exercised in cleaning and disinfecting the hands and arms.

After having carefully removed the placenta (intact if possible), the uterus should be well washed out with lukewarm water containing (1) a solution of hyd. perchlor 1-1000, (2) 1 per cent. creolin, (3) or carbolic acid 1 per cent. along with 20 per cent. of sod. bicarb. The buttocks and tail and the hind legs should be also washed with either of the above solutions.

The hinder extremities of all in-contact cows should be cleaned and treated as above, and the tails cleaned and trimmed. The vaginas of those cows should also be douched with one of the above or a similar antiseptic. Some people object to interfering with the vaginas of in-calf cows, and say that douching is liable to bring on straining and abortion of itself, but I have

never known it to do any harm, and in cases where abortion has followed its use, the probabilities are that the cows had been previously affected and would have aborted in any case.

In the case of a bull having been unwittingly allowed to serve an affected cow, the penis and sheath should be thoroughly washed and disinfected in a like manner, and with a similar solution to that used with the cows. The washings may be repeated every day for a week.

The floors of the byres, as well as the walls, stalls, and drains, should be thoroughly cleaned and washed with a 10 per cent. hot solution of calc. chlor. twice or three times, at intervals of a couple of days, and the liquid manure disinfected with calc. chlor. carefully swept up and put away from contact with the cattle, and not allowed to run into drains communicating with pasture land.

In drawing my paper to a close, I hope to be able to learn something from the experience of the members present, and beg to thank you, Mr. President, as well as those members, for the kind attention which you have given to my poor effort to interest you this evening, and trust that next time we meet in Limerick some of my brother practitioners will have something a long way better to offer you.

Discussion.

The CHAIRMAN said: I think the best thanks of the meeting are due to Mr. Winter for his paper. He has dealt with a very interestiug subject, and I think he has done it great justice. It is a disease that is not alone prevalent in this country, but in England there is a great deal of it. It prevails very much in the Midlands, and in my opinion it is a disease that should be looked after by the Government, and I think that it is quite as worthy of Government legislation as tuberculosis was, or other specific diseases. I would be glad to hear the opinion of anyone else in reference to the paper.

Mr. CHRISTY: I think Mr. Winter deserves our hearty thanks for the manner in which he has brought this important subject before us. It is one that must have taken a good deal of trouble in preparing. Mr. Winter has dealt with the remedies for the disease, but the difficulty that I see with regard to isolation is, how can it be enforced? It is not very easy to get owners of animals to isolate them, and Mr. Winter laid stress upon that point. With reference to the other principal points in the treatment of the disease and the causes for it, I think they have been ably dealt with; but there was one matter which Mr. Winter mentioned, and, as a practical man, I would like to know how it can be carried out, namely, when a bull has been in contact with an animal that has aborted how can the sheath and the penis be completely disinfected.

Mr. WINTER said he would answer any questions that were put to him altogether.

Mr. RYAN: I would wish to ask how long should elapse after a cow has aborted before the bull be permitted to go near her.

Mr. COLL: I would just like to mention an instance which came under my notice some eighteen years ago. This occurred with a number of cattle in the Kilmallock Union, near Kilfinane, some of the cows aborted, and I was sent for to examine them. My advice was asked, and I found that I could trace no cause for the disease except that the cows were bedded in sand. The bedding became uneven with the moving of the animals' fore feet, with the result that it got into lumps at the hind legs, causing a hollow, and the pressure on the abdominal muscles gave me reason to think that the cause of the abortion resulted from such pressure. I had the sand bedding removed and ordinary straw substituted, with the result that in a very short time the abortion ceased altogether.

Mr. HOWARD said that they were greatly indebted to Mr. Winter for his valuable paper. He would desire to know if inbred cattle were more subject to the disease than other kinds. He had remarked himself that some mares and cows can stand any amount of abuse, and do not abort. Mr. Coll had attributed abortion in one case to the animals being bedded in sand. In the western part of Clare he never saw any other bedding used, but they had very little abortion.

Mr. KELLY: I must deny that sand is the only bedding used in the west of Clare. As we are on the subject, I would like to know what is the cause of cows re-bulling?

Mr. CLERY said the paper read by Mr. Winter was no doubt interesting, particularly as the questions raised were based on many years' experience. In the country where he came from, the disease does not exist at all. They know of no such thing as abortion except where there was a sporadic cause. He could not, for his part, agree with Mr. Winter, that symptoms of the disease might be coming on for a week. He never saw the symptoms coming on for that period. He would be anxious that Mr. Winter would answer Mr. Christy's query in reference to the manner of disinfecting.

The CHAIRMAN said he could not concur in the germ theory.

Mr. BULLEN asked if a mare might abort as the result of being hunted by a dog, and he asked the question because he had an instance of the kind where a mare was hunted by dogs, and she was said to have aborted.

Mr. WINTER, replying to the questions put to him, said as regards the isolation of cattle affected with abortion, that was one of the great difficulties that was experienced; they could not get owners to isolate their cattle; if advice were given to ten to isolate their cattle, not more than one out of the ten would carry out that advice. Isolation was good also in the case of other diseases. With regard to the virus it weakens in new animals, and in inbred animals the effects would be more serious, as their systems are weaker. As to the means for disinfecting the bull, he suggested that a syringe could be used and inserted into the bull.

Mr. CHRISTY: How far could the syringe be inserted?

Mr. WINTER: I should say about a foot, and I think it would very soon have the desired effect. Another way would be to put the bull under chloroform. In reference to the question put by Mr. Ryan as to the time which should elapse before an aborted cow should be bulled, he (Mr. Winter) would say that the time should vary from two to three months.

Mr. RYAN: Because the reason I asked you the question was that I was asked it myself at my examination, and the examiner said that the cow should not be bulled before twelve months. I would like to know the difference between premature abortion and premature birth.

Mr. WINTER said that in case of premature birth an animal might live; premature abortion could not live outside the mother.

Mr. HEALY: As regards the time that should elapse before a cow that aborted should be re-bulled, I quite agree with Mr. Ryan.

Mr. WINTER: With reference to sand as bedding, I do not think that that would cause abortion. As regards other questions by Mr. Rea, difficult parturition had no effect on a bull except the birth was premature. Inbred cattle were more subject to abortion. With reference to Mr. Clery's remark about the symptoms, he (Mr. Winter) had not said that symptoms might be observed for a week. The Chairman had stated that he did not believe the germ theory. Well, if that were right, how could it be accounted for that thirty or forty cows, if together, would all abort. He gave an instance where a farmer had a number of cattle which aborted one after another.

The CHAIRMAN: I believe that sympathy has a good deal to do with it: that is, if one of a number of cows abort, it may have the effect of causing

other cows to abort out of sympathy with the animal that has already aborted. I believe that, to a great extent, is the cause of it.

Mr. KELLY remarked that he believed in rigid separation in cases of abortion.

Mr. WINTER, in reply to Mr. Bullen, said of course a mare would abort from being hunted, or from fright, shock, or accident. That was a very natural occurrence.

Arrangement of Future Meetings.

Mr. WATSON said there had been a suggestion made that their association should hold hold a meeting in Dublin during the horse-show week. It was almost impossible, during the show, to get members together, except that they met at Corlass's, or some other such place of worship. He would be very glad to get the opinion of that meeting on the matter.

Mr. WINTER: I think that it would be well that our ordinary meeting should take place in Dundalk during the month of July.

Mr. HOWARD: There is a rule with regard to the holding of our meetings.

Mr. WATSON: The rule as it exists is that meetings should be held in Dublin in January, Limerick Junction in April, Dundalk in July, and Ballinasloe in October.

Mr. WINTER suggested that they should hold a meeting in connection with the Cahiree fair. It would be a good centre for an assembly of veterinary surgeons.

Mr. CHRISTY: There could be an extraordinary meeting to decide the question as to the holding of our next meeting.

Mr. WATSON: According to the rule our next quarterly meeting must be held in Dundalk in July.

Mr. WINTER: I think that we should have the next meeting either in Buttevant or Mallow, in connection with the Cahiree fair.

Mr. CHRISTY alluded to the custom of the old association, and he considered that the greater number of meetings they had in the year the better it would be for the Society. He thought that Cahiree would be the most suitable place for holding the next extraordinary meeting. He would therefore propose that the next meeting of the association should be held in connection with Cahiree fair.

Mr. BULLER seconded the proposition.

Mr. COLL: I think we have been getting on very well, and we might leave well enough alone, but when there are so many propositions made, I think I would not be out of place in suggesting that we would hold a meeting in Belfast in July.

The meeting decided to accept Mr. Christy's proposition to hold the next meeting in Mallow in connection with the fair of Cahiree. It was also arranged that the first meeting should be held in Dundalk in July.

Mr. CLERY promised to read a paper at Dundalk, and Mr. BULLEN made a similar promise with regard to the Mallow meeting.

Vote of Thanks.

On the motion of Mr. CLERY, seconded by Mr. REA, a hearty vote of thanks was passed to Mr. Winter for his able paper.

Mr. WINTER briefly returned thanks.

WESTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE fifteenth annual meeting was held at the New London Hotel, Exeter, on Thursday afternoon, March 24th. The President (Mr. W. Penhale, Holsworthy) occupied the chair; and there were also present Professor McFadyean,

M.B., C.M., B.Sc. (London), Messrs. J. P. Heath, W. Penhale (Barnstaple) Vice-Presidents: Mr. W. B. Nelder, Exeter, Treasurer; Mr. J. Dunstan, St. Mellion, Secretary; and Messrs. T. E. Baker, Crewkerne; W. H. Bloye, Plymouth; E. W. Bovett, Bridgwater; H. P. Chase, Tiverton; F. P. Collings, Plymouth; H. W. Davie, Crediton; G. H. Elder, Taunton; G. H. Gibbings, Tavistock; C. H. Golledge, Sherborne; F. T. Harvey, St. Columb; C. Howard, Exmouth; A. H. Oliver, Devonport; R. E. L. Penhale, Haltherleigh; W. Roach, Exeter; E. J. Thorburn, Okehampton; R. J. Collings, F. C. Hobbs, Exeter; and Watkins.

Letters of apology for non-attendance were received from Professors Penberthy, Macqueen, Hobday, Shave, Pritchard, and Williams; Messrs. E. J. Bath, F. G. Ashley, O. G. Barrow, Hy. Olver, T. Olver, W. Ascott, A. J. Down.

After the minutes of the last meeting had been read and adopted,

The HON. TREASURER (Mr. W. B. Nelder) said his report was not as satisfactory as he could have wished, although it was certainly better than last year's. But a great number of members had not paid their subscriptions for years—in fact, he was almost ashamed to say how many—and he thought the time was come when something should be done in the matter. The subject had been shelved too often. There was a balance at bank amounting to £62 4s. 3d. The expenses had been £7 7s.; subscriptions had amounted to £11 0s. 6d. He suggested that those members who were in arrear should be sent to, and if there was not a favourable reply, they should be asked to resign.

In answer to Mr. Penhale, Mr. NELDER said some of the members were as much as seven years in arrear.

The HON. SECRETARY said that most of the Associations struck off members who had ceased to subscribe for four years.

Mr. NELDER: Our members who are in arrear never attend the meetings, nor pay their subscriptions.

Mr. PENHALE (Barnstaple) said that if a member ceased for three years to subscribe, his membership should cease.

Mr. NELDER moved that gentlemen whose subscriptions were in arrear should be sent notices reminding them of the amount due.

Mr. ROACH seconded the motion, which was agreed to.

Mr. HEATH said as the Association was accumulating money, he thought the next meeting should be asked to consider whether the annual subscription should be lowered. He did not know what they wanted to do with the money unless they joined the National Veterinary Benevolent and Mutual Defence Fund. Otherwise it seemed to him that they were asking for a bigger subscription than was required to carry on the work.

Mr. CHASE: If they won't pay half-a-guinea they won't pay five shillings.

Mr. PENHALE (Barnstaple): Let it go on until we have a reserve fund of £100.

Mr. HEATH said he was only actuated by a desire to ventilate the subject.

Mr. CHASE: We might want to defend some of our members who may get into a bother. We might want to vote £20 to such a purpose.

The HON. SECRETARY: In the event of the amalgamation of the local associations with the National, which I hope soon to see, we shall want every penny of our half-guinea annual subscriptions.

The subject then dropped.

Mr. Bath (Bristol) wrote stating that he should be pleased to subscribe to the Association if elected a member.

Mr. PENHALE (Barnstaple) proposed, and Mr. NELDER seconded, that Mr. Bath be elected a member of the Association. Carried unanimously.

Election of Officers.

Mr. CHASE said that they could do no less than offer the presidential chair for the ensuing year to one who had done more for this Association than any other individual member. He referred to Mr. W. B. Nelder. Seeing the work he had done for the Association for some years, and how he had been the life and soul of the thing when everybody else was apathetic, they would, no doubt, be all pleased in electing him as President.

Mr. J. P. HEATH seconded the motion.

Mr. NELDER said he was much obliged to Mr. Chase and Mr. Heath, but he could not see his way clear to accept the honour. There were many senior members who had a better claim. He begged to propose Mr. Harvey, of St. Columb.

Mr. HARVEY said he hoped Mr. Nelder would again take the office.

The CHAIRMAN said whatever honour attached to the presidential chair belonged to the man who did the most work for the Association. That man was Mr. Nelder.

Mr. NELDER, however, positively declined.

Mr. BLOYE said nobody would more strongly contend than he would that Mr. Nelder was deserving of honour in connexion with that Association. But few members had greater claim to the presidential chair than Mr. Harvey. He had more than once filled the breach when, at their meetings, they had required someone to read a paper; and no man was better qualified than he to fill the position. He was a Cornishman, and Cornwall had been somewhat neglected. Now the Association had a Secretary from that county, and it would help them on considerably if they also had a President. He had great pleasure in seconding Mr. Harvey's nomination.

Mr. HARVEY was then unanimously elected.

The Vice-Presidents were elected as follows:—Messrs. J. P. Heath, C. Parsons, W. Penhale (Barnstaple), T. Olver, G. H. Elder, W. H. Bloye, C. H. Golledge, and W. Penhale (Holsworthy), the last-named taking the place of Mr. W. H. Thomas.

Mr. G. H. GIBBINGS (Tavistock), in moving the re-election of the Hon. Secretary, said that Mr. Dunstan had fulfilled the duties in an able manner, and he had been mainly instrumental in getting such a large attendance at the meeting that day.

Mr. HARVEY, in seconding, said Mr. Dunstan had already proved himself to be an excellent Secretary.

On the motion of Mr. HARVEY, seconded by Mr. NELDER, it was decided to hold the next meeting at Plymouth.

In answer to a question, the SECRETARY said that eight members attended the last meeting at Plymouth.

Mr. PENHALE (Barnstaple), said the association seemed to be better accommodated in Exeter, the centre of Devon, then it did on the borders of Cornwall. He hoped they would be more successful at Plymouth next time.

The CHAIRMAN said that no doubt an Exeter meeting secured the best attendance, but seeing that Mr. Harvey was president next year, they could not do better than go half way to meet him.

Messrs. Bloye and Collings were appointed dinner stewards for the Plymouth meeting.

The HON. SEC. announced that he had received a request from the Royal Agricultural Benevolent Institution, requesting that the Association should subscribe to their funds. He had ascertained from the veterinary journals that the Eastern Counties Association subscribed £2 2s. annually, and that was the only society that he could find mentioned. It was an institution for the benefit of destitute farmers and their families.

Mr. PENHALE (Barnstaple) said as the Association had many calls from their professional brethren, he would propose that the communication lie on the table.

Mr. ROACH seconded the motion, which was carried nnanimously.

The Victoria Veterinary Benevolent Fund.

Mr. PENHALE (Barnstaple), said he believed this Jubilee Fund was started for the help of those veterinary surgeons and their families who were sadly in need of funds. It sometimes happened that a professional brother was laid up by sickness or died, his wife and family being left helpless to do battle with the world. There was no necessity to dilate on the struggles they might be called upon to endure, but they might be mitigated by a little timely help from the members of the profession as a body. The fund was a capital one, although he believed there was a similar one in the North of England. If the Association gave about £5 5s. to the Victoria Fund, he thought it would meet the case, and he would propose that that sum be voted.

Mr. ELDER, in seconding, said he did not think the Victoria Fund was antagonistic to the existing society.

Professor MCFADYEAN, in response to a request from the Chairman, said he should have great pleasure in explaining what the objects of the Victoria Benevolent Fund were. He ought, perhaps, to take the opportunity of correcting what appeared to be a widespread misapprehension, and that was that this new society was in conflict with the one that had been in existence for some years, and was known as the Benevolent and Mutual Defence Society, sometimes called the Manchester Society. He was not himself a member of that society, but he thought that it was one that could give admirable reasons for its existence. He thought no one would deny that the profession ought to have a defence society. Veterinary surgeons needed to have a mutual benevolent society. The new society had quite other objects. It was purely a benevolent society. It was not intended to help those only who were subscribers to the fund. It was simply intended to give succour to those members of the profession, or to the members of their families who were absolutely helpless, and were urgently standing in need of help. There was no one who would say that it was not desirable for the profession in the latter part of the 19th century to have such a body. He really could not say as he should like how strongly he felt that this new society was deserving of help and support; and he was pleased to find this association looked upon it in that light.

A donation of £5 5s. was then voted.

The CHAIRMAN said he had received a letter from the Mutual Benevolent Society (the Manchester one) asking him to bring its claims before the association.

On the motion of Mr. ROACH, the communication was laid on the table.

The CHAIRMAN said the Secretary had framed a draft of the proposed new rules for the association. The old rules which were drawn up on the formation of the association, 15 years ago, needed revision. But there was hardly time to go into the matter then, and the Secretary himself suggested that a sub-committee should be appointed to consider the suggested alterations.

The HON. SECRETARY said he had procured copies of the rules of the chief sister associations, and from them, with the aid of Mr. Bloye and Mr. Penhale, he had drawn up the proposed new set.

It was then decided that a rough draught of the new rules be printed and circulated among the members, so that all members might be able to give notice of any suggested alterations before the next meeting.

The National Meeting, 1899.

Mr. BLOYE said he believed the members of the Society would be glad to know that the National Veterinary Association was anxious to come into Devonshire for its meeting in 1899. The matter was mentioned to him at the last meeting. Some of the responsible officials thought, and he thought as well, that not only would it be a good thing for the National, but it would be a good thing also for the association and members of the profession in this neighbourhood. At the forthcoming meeting of the National Society, part of the business was the selection of the town they must visit in the following year. He now simply suggested that the Society be invited to visit Devonshire in 1899, and that a committee be appointed to go into the matter. It would probably mean a guarantee fund, but that was a matter which might easily be overcome.

The CHAIRMAN: Have you any idea of the amount?

Mr. BLOYE: I have not.

Mr. PENHALE (Barnstaple): Can you say approximately?

Mr. BLOYE said much of the expense of previous years in connection with the National meeting had been incurred in consequence of the entertainments which had been given by the receiving society. It appeared, however, from this year's contemplated proceeding that the entertainment was to be dispensed with, and that work rather than play was to be the chief consideration. In Devonshire there was plenty to attract visitors; and he had no doubt that the county could call together a large number of members without providing an entertainment. But this, of course, would be a matter for after consideration. The visit would entail a certain amount of work on the local members, but he did not think the expense was to be feared at all.

Mr. PENHALE (Barnstaple) moved that a committee, consisting of Messrs. Bloye, Elder, and Heath, be appointed to consider the subject.

Mr. NELDER seconded the motion, which was carried with the additions of Mr. Penhale, the hon. treasurer and hon. sec. to the committee.

Prof. J. MCFADYEAN next read a most able and valuable paper on "Anthrax," dividing the subject under several heads and dealing separately and explictly with each one. The paper is printed in full in *The Journal of Comparative Pathology and Therapeutics* for March.

He first laid great stress on the necessity of using the word anthrax in connection with the disease caused by the bacillus anthracis only, and considered it advisable that the word anthracoid should be dropped altogether, it being now loosely applied to diseases which are etiologically quite distinct, and it conveyed no more meaning than the words tuberculoid or glanderoid would under like circumstances.

The anthrax bacillus was first discovered by Rayer and Davaine in 1849, but it was not until 1876 when Koch discovered the phenomenon of sporulation of the rods, and demonstrated the infectivity of artificial cultures that the final proof that the bacilli were the cause of the disease was furnished. The bacilli in the blood of an animal recently dead occur in the form of cylindrical straight, or slightly curved motionless rods about 1.5 micro-millimetre in breadth, and varying in length from 5-20 m.m. These rods, when unstained, appear structureless, but when they are appropriately stained each rod is found to be made up of from two to ten segments, which are the true bacterial cells. The segments were held together by a common envelope and united end to end by thin discs.

He next dealt at length with the staining of the bacilli, explaining the value of the different stains in enabling one to distinguish between anthrax bacilli and other bacilli, which in the unstained blood so closely resemble each other as to be undistinguishable.

The process of sporulation is one of very great importance, as anthrax spores offer much greater resistance than the vegetative elements or bacilli to such agents as heat, sunlight, and chemical disinfectants.

Sporulation cannot take place without full exposure of the anthrax rods to the air or oxygen, and only between the temperature of 64° and 107° F. This explains why sporulation never takes place during life, or in the dead body whilst it remains intact. The temperature at which sporulation is most rapidly effected is 90° F., 100° F. At 65-70° F. it requires about a week. In the dried state, and protected from sunlight, anthrax spores retain their vitality and power of germination for an indefinite period, but as soon as they find themselves in suitable conditions of moisture and temperature, they germinate and produce vegetative elements or bacilli.

The anthrax bacillus is a strict ærobe, and the limits of temperature within which it will grow are 60° F. and 111°. In the complete absence of oxygen no growth can take place ; therefore, as soon as the death of an affected animal takes place, the growth and multiplication of anthrax bacilli in the blood and tissues of the body ceases. In considering the question of resistance of the virus, he stated that sunlight is fatal to the bacilli in blood exposed to the air in less than twenty-four hours, but, in the dry state, spores may resist exposure to sunlight for a month or more.

The bacilli in fresh anthrax blood are killed by a few minutes' exposure to a temperature of 60°C., a moist heat of 100°C. is fatal within five minutes to spores, but they may resist a temperature of 95°C. for ten minutes.

To instantly destroy spores in the dry state a temperature of 106°C. is required. Bacilli in blood are quickly destroyed by exposure to 2½ per cent. solution of carbolic acid or chloride of lime in water, or by ·2 per cent. aqueous solution of mercuric chloride. On the other hand, spores are not with certainty destroyed by a week's exposure to a 5 per cent. solution of carbolic acid in water, but ½ per cent. solution of mercuric chloride is fatal to them in a few minutes when contact can be assured.

He then went on to speak of the attenuation of virulence and of the preparation of vaccine, and in speaking of the distribution of the bacillus within the body, stated that they were always to be found in the blood vessels, even in the minutest capillaries, therefore in making a *post-mortem*, microscopical diagnosis, an ear or a foot were the best parts to take the blood from, especially if the animal had been dead some time, as there was less likelihood of there being any putrefactive organisms present than if the blood were taken from any of the internal organs. He stated that there can be little doubt that in perfectly natural circumstances the anthrax bacillus frequently finds all the conditions necessary for its multiplication external to the animal body, but at the same time it is probable that at least in temperate climates, such as ours, it depends for its continued existence mainly on its power of propagating in the body. There are good grounds for believing that during the greater part of the year in this country surface contamination of the soil, with blood, urine or fæces of an anthrax animal is only temporary. If, however, the temperature is over 70°F. the result may be very different, for the bacilli may then form spores.

Summing up what he had said under the heading, "Habit of Life of the bacillus," he said, it appears highly probable that those parts of the earth's surface at which anthrax germs at present exist, owe their contamination to the excrement, urine or other discharges of animals suffering from anthrax, or to the blood shed on the surface of the soil during *post-mortem* examination. The method of infection may be by inhalation, inoculation, or ingestion, the latter being far and away the most common. All the domestic animals in this country are susceptible.

The symptoms: Temperature 2°-4° F. above normal, with the common

accompanying signs of fever, and in fatal cases great prostration, profound dulness of expression, rapid heart action, and feeble arterial pulsation, occasionally more or less blood is passed with the fæces.

Death usually takes place quietly without convulsions. The above are the symptoms peculiar to the ox, and those of the sheep are very similar. In the horse there are frequently indications of abdominal pain, and there is often swelling of the throat. In the pig swelling of the throat is a very characteristic symptom.

He then went on to describe the *post-mortem* lesions which are too well known to need description. Speaking of diagnosis, he said the veterinary surgeon usually had a dead carcase at his disposal, and the safest method of examination was by means of the microscope. Treatment was of no avail.

Prevention.—The measures that may be taken with the object of prevention comprise (1) preventive inoculation; (2) those precautions against infection which are suggested by a knowledge of the methods by which the disease is generally contracted and spread.

In considering what prophylactic means may be taken when an outbreak of anthrax occurs, it is necessary to remember that every animal affected with the disease is a source of soil contamination while it is still alive, by reason of the bacilli voided in its urine or excrement, and that it may be made a still more serious source of contamination after death, if its carcase is improperly dealt with. To limit the dangers arising in the first of these ways every animal suspected of anthrax (and when an outbreak occurs many cases may be diagnosed by the thermometer) ought to be confined in a place that admits of being thoroughly disinfected. The dung, litter, etc., in the place should be afterwards destroyed by burning, and the floors and walls ought to be treated with some reliable germicide. If the disinfection is practised at once, and the temperature does not exceed 70° F., it may safely be considered that any disinfectant capable of destroying spore-free bacilli will suffice, such as a 2 or 3 per cent. solution of carbolic acid, creolin, or chloride of lime.

On the other hand if the temperature has been 80° F. and a day or more has elapsed since the contamination occurred, rendering it probable that spores may have been formed, stronger agents such as ½ per cent. of mercuric chloride ought to be employed. It is also worth while remembering that the disinfectant power of any of these solutions is intensified by using them hot. Every case of sudden unexpected death in cattle, sheep, or horses ought to be suspected of anthrax until the contrary is ascertained. The carcase should be buried six feet deep with plenty of fresh lime above and underneath.

Finally, when an outbreak of anthrax occurs among animals at grass, it is advisable to keep animals off the field in which the death occurred as long as possible.

(*To be continued.*)

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

(*Continued from page* 348.)

Roaring.—Roaring in almost every case can be tested by a severe test. Undoubted cases of this disease exist which are easily discernable one day and not so the next. As roaring is common, and as practitioners have often differed as to its existence in distinctly confirmed cases, it becomes no easy matter to convince some clients that carelessness or negligence has not been committed when an intermittent roarer evades detection on one of his good days. A reasonable owner may be convinced by daily repetition of the test, but I apprehend few disappointed clients would take this trouble. Intermittent roaring is so uncommon that perhaps we may with an easy mind

accept it as a "trade risk," but it should certainly be recognised as a possibility. Practitioners should be sure, in disputed cases, that this form of roaring is not present before they give positive opinions that another veterinary surgeon has made a mistake or been guilty of negligence.

Rheumatism.—Rheumatism is another troublesome intermittent disease. At the time of examination the horse may be going absolutely sound, and yet on the following day he may be dead lame. We all know that some little time must elapse before we are in a position to give a definite opinion as to whether the disease is rheumatism or not, and in the meantime we cut a sorry figure. Horses may have repeated attacks of this disease extending sometimes over many months, and in the intervals of soundness any practitioner would give a certificate of soundness. What adds to the risks of such cases is the possibility of other practitioners being consulted without the cognisance of the first examiner, and therefore not informed as to the history of the case. These gentlemen may, and in all probability would, arrive at a different diagnosis, and give opinions that the splint is the cause of lameness, or that the foot is the seat of the trouble. It is important in all cases of dubious lameness—and I cannot help classing rheumatism as a dubious one—to obtain a true history of the case, and where an action is threatened it is only justice and etiquette to communicate with the veterinary surgeon who examined the horse formerly, before giving a positive opinion

Glanders and Tuberculosis.—There are some important diseases that have a long period of latency during which no sign of their existence is apparent. A few years ago we certainly could not be held responsible for not detecting these diseases before they had produced constitutional disturbances, or become attended by clinical symptoms. What our position is now is a little uncertain, as we have in mallein and tuberculin agents which would disclose the disease if used. But is it to be supposed that we should insist upon injecting mallein and tuberculin into every horse we examine? My own humble opinion is that is not, nor do I think for one moment the owners would consent to such a course. In such circumstances four or five days at least would be occupied in making the test. But the requirement may not be altogether imaginary, as may be gathered from the following quotation taken from the editorial colume of the *Journal of Comparative Pathology and Therapeutics*, page 346:—"Examination by a competent veterinary surgeon prior to purchase is a tolerably certain safeguard against such a calamity, and where it fails the loss can be thrown on the veterinary surgeon who made the error." This paragraph was written in reference to clinically glandered horses. Of course, what applies to glanders would also apply to tuberculosis, and a clinical sign of either may be a very ill-marked indication.

Now, with all these risks before us, I want to put to you, gentlemen, this question, "How long, after having certified a horse as sound, are we to be held responsible for that certificate?" Personally, I think each individual case must settle itself. I remember an eye case in which the practitioner who examined the horse was threatened with an action eight weeks after the examination, though he had never heard a word as to anything being wrong with the animal in the interval. The case was settled by the veterinary surgeon paying a sum (he happened to be very ill at the time and could not stand the worry of the case). This same horse was passed the week following by a friend of mine who had him under observation several years afterwards, and who declared him perfectly sound in his eyes. The horse was a hunter, and was examined for and carried a M.F.H. The veterinary surgeon who was threatened with this action did not, I regret to say, belong to the Defence Society, or he would have been saved much worry and nearly £100. Moral: Join the Defence.

We all run considerable risks when examining at sale yards, and require to be very discreet. I always shun sale yards like the plague. Still, at times we are compelled to examine horses at such places; indeed, there are plenty of veterinary surgeons who habitually attend certain sale-yards with that object. I am content to let them do so. I never remember examining a horse at a sale-yard yet with anything approaching satisfaction to myself, nor have I ever, in my recollection, given a certificate for such examination. I usually tell a client of my objections to these places, assure him I will do the best I can, but decline to take responsibility. This is a safe course to take, and when we consider the large number of unsound horses sent to auction, many specially got ready, it behoves us to protect ourselves.

I do not profess to have exhausted the subject of the risk we run in certifying soundness. The time at my disposal since promising to read a paper has been very limited. I have done my best. My aim has been to evoke discussion on this very important subject, that we may all mutually benefit, and if I succeed in this, the shortcomings of my paper will, I hope be overlooked.

Discussion.

Mr. ALEX. LAWSON, in opening the discussion, congratulated the essayist on his exhaustive and instructive paper. Of horse purchasers who employed veterinary surgeons to examine for them he got on best with those who understood horses, while those who did not understand and pretended to, or who felt it to be only a very simple matter to buy and examine horses, were the worst to deal with. His little experience of French veterinarians was that they took sometimes a whole day to examine a horse. They did examine horses there—they went in for everything. With respect to the eyes, he pointed out the wisdom of examining them in a dark box with a candle, and instanced a case as follows:—When examining some horses in Leicestershire, a friend sought his opinion on a dispute which had arisen in connection with the eyes of a horses. Those concerned in the dispute maintained that there was something wrong with the eyes. Though he scarcely liked giving his opinion, which might probably be diametrically opposed to his friend's he examined the horse with the hat, but could not see anything wrong with the eyes, which appeared to be beautiful; however, on examining them in a dark box with a candle he, at once, found that one eye was perfectly blind with gutta serena. His friend, who confessed that he had not examined them in a dark box with a candle, had to pay something like £70 to £80 for the omission. Continuing, Mr. Lawson said he examined a horse in Manchester last summer for a man who was a recognised judge of hackneys in the South of England. It was a prize horse—a fine, strapping animal, five to six years old, and had got over its troubles. The only thing wrong with it was a splint on each foreleg, but he passed the horse as practically sound, and recommended its being bought. It was bought, and he sent it as far as Bristol to his client, whose first act was to call in two other veterinary surgeons, who said it was very unsound. He received a letter from his client expressing astonishment that an unsound horse should have been bought and sent to him, and he would make him responsible for the carriage, the price of the animal, and veterinary surgeon's opinion—in fact, everything. As to removing the shoes of horses when examining, this he did not do, though he admitted there were cases where a veterinary surgeon could get into trouble by not doing so, but in the hunting trade a good deal of risk had to be taken. Cart horses, of course, were bought subject to their being good workers and sound on their feet. Supposing he was sent in Leicestershire to examine horses, and was three miles from a forge, no blacksmith on the premises, and he had only an hour to catch a train, he would not take off the shoes. Teeth he very rarely

looked at as he had no time. Mr. Abson's advice was, of course, very good. Proceeding, Mr. Lawson said he had unnerved horses, which afterwards had sold well. He asked whether the members had ever seen a horse's nostril plugged with tow to hide nasal gleet? What an important thing wind was in a hunter! In this regard it was difficult to please both sides. In cases where it could not be called whistling or roaring, he generally said there was an unnatural noise, and that the animal might become a roarer. As to shivering, he had seen some funny cases of this. He had noticed horses where one man had pronounced the shivering as stringhalt, and another man had maintained that there was no stringhalt. Of course, shivering, as a rule, was a very easy thing to find out; the difficulty, however, lay in discovering a shiverer in the fair. This was a most important thing.

Mr. WOLSTENHOLME said he was deeply interested in Mr. Abson's paper, as it was eminently practical, and the kind of paper of most value to the bulk of veterinary surgeons. The experiences of one member in the every day duties of his vocation, when compared with that of others, in all cases tended to the general advancement. Respecting the examination of the molar teeth, at one time he was not in the habit of examining them, but became impressed with the necessity of so doing from a discussion or conversation which took place at a meeting of the Society. He thought it was necessary that they should be examined, and if a case in proof were needed he might cite one which he had met with recently, in which a newly purchased, rising four, van horse had suffered from very impaired mastication on account of disease of the alveoli, which rendered the horse not only unsound but practically useless. It was not much trouble to examine a horse's molars. If the head was turned to the light, the tongue drawn out and slightly lifted, it was an easy thing to see the condition of the teeth, and also with a little trouble they might be felt. He quite agreed with Mr. Abson as to the care which was necessary in detecting a horse which had been unnerved, and in the course of the practical examinations of the students, he had often admired the exceedingly neat manner in which the operations had been performed—so neat, indeed, that it was scaraely possible to detect a cicatrix with either the hand or the eye. In examining geldings it was certainly necessary to pay attention to the condition of the cord, as it was quite possible that a small scirrhous cord might be overlooked. With respect to megrims, he quite agreed with the essayist that there were certain cases in which it was absolutely impossible for the best and most careful judge to detect or pronounce upon—horses which in colder weather would go for months without showing any symptoms, and then possibly in the summer after a hasty or hearty meal the symptoms would become apparent on violent exercise. He opined that the disease known as shivering in some cases was very difficult to detect; indeed, it was well known that certain young horses which had shown no symptoms of it, suddenly, or in a very short period afterwards, became so affected, whatever might be the exciting cause, be it cold or puberty. Roaring was also at times a stumbling block to the veterinary surgeon. There were cases on record in which a horse was not a roarer at a given date, and the day after proved to make an abnormal respiratory sound which persisted as a roarer. He well remembered a case in which a horse whistled and roared loudly on violent exercise; this entirely passed away for a considerable period, but recurred, and eventually the animal became a confirmed roarer. Then, again, in the examination of young horses from fairs, particularly when influenza or pink-eye was prevalent, the veterinary surgeon found himself in a very curious predicament if, after passing a horse as sound on one day, the animal was distinctly ill with high temperature the next. At such times he was in the habit of taking the temperature as part of the examination, and had frequently

found a temperature of 103°, upon which he had declined to proceed further with the examination, and waited for fresh developments.

Mr. CARTER, after thanking Mr. Abson for his excellent and instructive paper, pointed out that he invariably examined the molar teeth of horses. If there was sufficient light, he got it reflected on the teeth, but if there was not, he simply ran his fingers over them. Raising the hind feet when examining horses as to soundness, was most important.

Mr. ALEX. LAWSON here explained that were he to perceive anything wrong with the teeth, he would go further into the matter, but he did not make a practice of examining them.

The PRESIDENT quoted a recent case, in which he was nearly involved in an action at law, just to show the difficult position a veterinary surgeon was placed in when dealing with a client who did not understand horses. In reference to roaring, in all abnormal sounds he would not pass such a horse. Queried by Mr. Lawson as to a "high blower," he said he would not pass it. In the certificate he would simply say that the animal had a high blowing sound, but was otherwise sound.

Mr. HALL expressed the opinion that if the examination was simply a matter of soundness or unsoundness, the veterinary surgeon's duties would be much simplified, but it was a question of likely to be serviceable, or usefully sound. A risk of some sort, of course, had to be run, as, probably, there was not a horse breathing that was technically sound. Mention had been made about examining the molar teeth, but he did not examine them with his hands, the condition of the teeth could always be told by their smell.

Mr. DARWELL thanked Mr. Abson for his most interesting paper, and said there was no doubt that the best clients to deal with were hunting men, to whom matters could be explained better than to those who did not understand horses. When examining it was most difficult to please both client and vendor.

Mr. ABSON, alluding to Mr. Lawson's reference to that suspicious noise in horses which he described as neither roaring nor whistling, said he thought they all had occasionally come across such cases, and it was certainly most difficult to say what was the precise region from which the noise was emitted. He had often thought that it was confined to the nostrils, and due to some thickening of the membrane of the nostrils. He agreed with Mr. Wolstenholme as to the neatness with which neurectomy was performed in London. A point which he did not mention in his paper was the precaution, when in dealers' yards which were teeming with influenza bacteria, to take temperature of the horse to see whether it was normal or not, and then no risk was run of introducing influenza to the stud of horses to which that horse was to be introduced. As to shivering, he considered that very few horses which had this disease recovered. This showed at once the heredity of shivering, and he thought the London Societies had just cause to include it amongst the list of hereditary diseases. Mr. Hall's reference to caries of the teeth recalled the circumstances of his passing, some years ago, a black mare, which as soon as put to work went to a bag of bones. She had some of the most irregular molars he had ever seen. Mr. Darwell had spoken of of examining horses for men who understood them. Of course it was a great pleasure to examine hunters for sporting men. It was well known that the legs of hunters were not nearly so important as in harness horses, whose limbs must be clean; but in all cases where doubt existed it was well for veterinary surgeons to shield themselves where there was anything approaching unsoundness.

The PRESIDENT proposed a vote of thanks to Mr. Abson for his very able and exhaustive paper.

Mr. CARTER having seconded, the proposition was carried with acclamation.

Mr. ABSON proposed a vote of thanks to the President for his conduct in the chair, and Mr. Hall seconded.

LINCOLNSHIRE VETERINARY MEDICAL ASSOCIATION.

(*Continued from page* 341.)

Discussion.

The CHAIRMAN expressed his sense of obligation to the lecturer for his eloquent and instructive address, in which he had been told many things he didn't know before, and had many of his old facts refreshed. He would invite discussion from any of the members on the various points of the lecture.

Mr. F. L. GOOCH, in thanking the lecturer for his interesting discourse, stated that when he first saw the subject of the lecture he expected a good discussion, but Professor Pritchard had put forward facts beyond discussion, at any rate not disputable, and, like the President, he was not only reminded of what he once knew, but had learnt several new facts. He had always relied on the catoptric test. He had been told by Professor Pritchard to examine not the central axis, but obliquely and, if not certain, to use the catoptric test, a course he had always pursued, but in future he would have to be more careful. As to the position of a horse's eyes, he would ask whether it would be justifiable in a certificate to condemn a horse as unsound on account of the divergence of the axes, or an inclination to be hare-eyed; and, if so, whether in all or only in harness horses. He himself would mention smaller animals—ponies, for instance, which could, without turning the head, see a long way behind.

Captain RUSSELL said when he first heard the subject of the lecture mentioned he thought it would be found peculiarly instructive, but it had also taken him back to twenty-seven years ago when, at the Royal Veterinary College, he had heard the lecturer. It had reminded him of the matters taught them and others learnt since, besides teaching him several facts not before within his knowledge. He could not imagine that a horse should be pronounced unsound because "hare-eyed," inasmuch as it was a defect of formation. He believed all horses could see behind them, and some even behind the blinkers, but their eyes he would pronounce perfectly normal. He would concede to the popular opinion as to the oyster opening and closing, and thought it the effort of exhausted nature which caused the oyster's shell to be opened. He always took it that he opened his mouth to eat, drink, and breathe, or why should the shopman take special pains to lay the oyster in salt water for these purposes. It had been a source of great pleasure to him to see and hear Professor Pritchard once more, and hoped they would all have that pleasure again and again.

Mr. FREER added his thanks and thought the Professor would not receive much heckling, as they were unable to find matter for so doing. He had been pleased to hear the remarks as to the catoptric test, and could corroborate the detection of cataract by the means of the examination named. He was anxiously hoping to hear an allusion to the *corpora nigra*, and would ask whether, in case not only of enlarged but dislocated *corpora nigra*, he should mention the fact in the certificate at all, or recommend a guarantee, or pronounce unsound. He had seen one which nearly covered the pupillary opening altogether. With regard to hare-eyed horses, he would not think it necessary to reject, but would pronounce as awkward and dangerous to ride. He had seen the eyes of some when seated in the saddle.

Mr. HOWSE stated in using the match or candle he had always held the same directly between his own and the horse's eye, as then only does it light up the whole of the crystalline lens.

Mr. E. C. RUSSELL would like the Professor to explain how it happened, if an overdose of opium was administered, there would be contraction of the pupillary opening and not dilatation, as with other sedatives.

Mr. MASON had been pleased with the attention drawn to the optical delusion of the British public and the practical facts Professor Pritchard had drawn attention to, and must admit to having received a tip or two, especially so as to the examination of a horse's eye. With regard to the pupillary opening, he would like to meet the Professor again and discuss the matter. The most debatable point to him seemed that of "hare-eyed" horses. He had ridden horses which seemed to stare him in the face, and looked upon it that the muscles were wrong and unable to be moved forward. In such cases he had drawn the attention of his clients to this, but had not condemned them, and he had advised them to ride with blinkers or a particular kind of bridle.

Mr. WRAGG thanked the lecturer for his remarks *re* popular superstitions as to animals seeing in the dark, and would ask for an opinion as to the one "blind as a bat." He had found bats see very well in the dark. Other old-fashioned beliefs or fallacies were those that wall-eyed horses never go blind, whereas he had seen them; also the controversy lately appearing in *The Field*, that blind-eyed horses have thick coats in summer and thin in winter, though there were not so many blind horses now as formerly. With regard to cataracts, these were often congenital and of very little injury to the horse, some being there and interfering very little with the sight, but liable to increase of the cataract and ophthalmia. He had special experience of a hunter with cataract, and had found him perfectly capable of jumping, the same hunter being afterwards sold for 540 guineas.

Professor PRITCHARD, in replying, said he believed he had said that a "hare-eyed" horse was unsound, but perhaps he should not use the word, but he would represent in the certificate the decreased value of the horse; he would expect to be hauled over the coals if he said nothing about it, and it was afterwards discovered. But as to the word "unsound," he did not think it necessary for an animal to be lame, have defective vision or wind, or to be a crib-biter or wind-sucker. The definition of "unsound" had been given (and he had never seen a better) that "anything which does now or may hereafter interfere with the usefulness of an animal is unsoundness." As to mentioning any defects in certificates of harness horses only, he took it that the purpose of purchase should not enter into the question at all, as it should not be in the mind of the veterinary giving the certificate. For instance, it had been mentioned in riding such a horse, it was a nuisance or awkward, and surely such a thing should lower its usefulness and value. As to horses seeing behind in blinkers under ordinary circumstances he could only imagine the blinkers didn't fit. He would repeat that the oyster had no capability of opening its shell or diverging them. Its shell opens by the muscular structure being relaxed, hence when dead the shell is always open. Here he would remark as to the beautiful set of teeth with which the oyster is provided. On either side of the elastic structure was a row of small pearls, and the oyster crushed its food by relaxing the muscles and allowing the shells to part, and then contracting, and so bringing the pearls together. He would not condemn a horse with *corpora nigra*, dislocated or however large, if of smooth edges, but however small he would condemn them if with ragged edges. He took them then as a most diagnostic symptom of the horse having suffered from "constitutional ophthalmia," and an indication present even when no other might be. He agreed as to the

light in the candle test being between the examiner and horse's eye. With regard to an overdose of opium, if a large dose of opium were used there would be a contraction of the pupillary opening, but it would not always cause relaxation of particular muscles. In case of sleep, the two sets of muscles were continually working one against the other, and in case of a strong dose, the one set of muscles might be robbed of the power of contraction, and the other set drawn to one side. He had in his mind, when mentioning sedatives, belladonna. "Blind as a bat." The bat was not blind, but had beautiful vision, and could see a gnat. The saying probably arose from the fact of the bat being generally seen in a low degree of light. But it might also be remembered that the bat could distend the skin of the wings with air, which would then be extremely sensitive and assist the bat towards his food. The experiment had been made of a bat, deprived of its eyes, in a small room with cotton string from the ceiling at widths equal to the width of a bat's extended wings, and the bat was found to be able to fly backwards and forwards, scarcely touching the cotton. "Wall eyes." These were due to a want of pigment in the iris. He had heard of coats changing at the wrong season of the year in blind animals, but thought the cases were not true. In coal pits many horses become blind through the constant low degree of light, and while there from the high degree of temperature, develop a smooth coat; and being brought to the surface in winter would be taken as having a summer coat. The remarks as to cataracts he agreed with.

Mr. GOOCH wished to know if it would be possible to have meetings at 2 p.m. in future, and gave notice that he would move that the time the meeting should be altered.

A vote of thanks was passed to Prof. Pritchard, who duly acknowledged the same, and a vote was also passed to the President for his conduct of the business during the previous year.

The CHAIRMAN thanked the members for their kind appreciation of his humble services, and expressed his pleasure if he had been able to do anything to assist the Association.

The next meeting was announced to be held at Peterborough. Dinner was afterwards partaken of by the members, provided by Host Fillingham, at the George Hotel, and the usual loyal and patriotic toasts were duly honoured.

THE LAHORE VETERINARY COLLEGE.

Sir Mackworth Young Distributes the Prizes.

THE annual prize distribution at the Lahore Veterinary School took place on Monday morning, when his His Honour the Lieutenant-Governor was present. The function was fixed for 7.30, and when Sir Mackworth Young drove up with Captain Annesley, his A.D.C., he was received by Veterinary Captain Pease, principal, and greeted with a military salute from the imposing line of soldier students of the college who were drawn up in front of the main building. Amongst those present were Mr. M. W. Fenton, C.S., Revenue Secretary to Government; Veterinary Captain J. B. Savage, Mian Mir; Lieutenant H. A. Sullivan, and Mr. F. Leigh. There was also a large and representative attendance of the native community.

The Principal's Address.

The following was the address of the principal:—

Your honour and gentlemen,—In the first place allow me to thank you on behalf of the students and the teachers of the College for honouring us with

your presence here to-day. The students will fully value the fact that to-day you witness their embarkation on a career in which there are great possibilities for doing good for their country by the alleviation of the sufferings of dumb creatures.

Possibly there is no country in the world where the necessity for the dissemination of veterinary science is greater than it is in this, seeing that the great majority of the people are concerned in Agriculture and hence dependent in no small degree on the domesticated animals for the very bread they eat. There is, perhaps, no country in the world where the people are more ignorant of the diseases of the animals on which they are dependent than they are in this. Any efforts which are made, therefore, in the direction of affording assistance in cases of sickness, and in giving advice in simple matters which are not understood by the people must be calculated to do good.

The passed students go out of this College with their minds in a very different condition to what they were two years ago, at the time of their entrance examination; then all was darkness, the causes of disease were hidden mysteries and their ideas of treatment were vague and empirical: they now see the absurdity of some of their ideas relating to disease, appreciating the real causes of epidemics instead of referring them to the influence of magic or witchcraft. Indeed, they have a good sound knowledge of veterinary medicine and surgery, which it needs only practice to perfect.

The calling which they have accepted is an honourable one; for what higher object can a man have in this life than the alleviation of pain in creatures unable to help themselves? The pursuit of this calling is, however, attended with some difficulties which it must be the object of all to overcome. The possibilities for good are so great that I sincerely trust all the students gathered here to-day will bear in mind what it has been my privilege to impress upon them during their training here, and will all strive to the utmost of their ability to do their duty to, and thus elevate their calling by performing the duties which may be allotted to them in such a manner as to command respect from all.

Last year I had the pleasure of giving your honour a short history of the growth and development of this institution; to tell you how, under the orders of our late respected chief, who has given us every Veterinary institution in the country, Veterinary Colonel Batt commenced in a small mud hut at Babughar to deliver elementary lectures to salutries, and teach them the rudiments of elementary surgery and medicine. How, chiefly owing to the influence of the late Colonel Ware, who fully recognised the benefits which veterinary science is capable of conferring on the agricultural population of this country, the Government of the Punjab gave us the present site and gradually added to the conveniences for teaching until we reached our present state.

Sixteen years have now elapsed since Colonel Kettlewell commenced his labours here, and during that time 460 men have graduated as Veterinary Assistants.

This is the second year of my tenure of office, and it is satisfactory for me to be able to report a year of continued improvement, the results of the final examination being better than have ever before been obtained since the foundation of the institution.

The practice, number of students, and receipts are better than last year.

Forty-three men presented themselves for the final examination, and of these only five failed to satisfy the examiners; this gives a percentage of 88 passes. But, in addition to this, the results are far more satisfactory in that such a great number of candidates obtained full marks in Equine medicine and surgery, there being no less than 17 in surgery and 8 in medicine. More-

over, the first man on the list obtained 379 marks out of a possible 400, whilst 23 men obtained over 300 marks against only two men last year. It appears, therefore, that our labours may be considered to have been successful in continuing to uphold and improve the good name for efficiency which this College bears. It appears that the new system of training has effected a considerable improvement.

At your Honour's last visit I informed you that the classes had been divided into junior and senior; and this year it gives me pleasure to be able to report that a new aid to teaching has been introduced in the form of a practical surgery class on the Continental plan, one day weekly being devoted solely to the study of this important subject, each man being made to perform with his own hands (but under supervision, of course,) the various operations which he may be called upon to perform after leaving college. This accustoms the men to handle instruments, and gives them confidence. When a man has thoroughly learnt from the text-book the proper mode of performing an operation and has then been given the opportunity of doing it under proper supervision, he is not likely to forget it easily. The result of the work done in this class has been a great improvement in surgery, in which subject seventeen men obtained full marks, so that from being the weakest subject at the examination, it has become the strongest.

The College still maintains its popularity: as a matter of fact, our class for this year is already full, and we have about 150 applications for admission, of which it will be possible to select only 10 men.

At your last visit I brought to your notice the great necessity of establishing a contagious diseases ward in connection with the college, and that need has been still further increased by the recent discoveries of Koch, and others, in regard to the most prevalent plague in India, rinderpest, and the adoption of other protective or curative inoculations. Your Honour was good enough to say that you felt deeply the need of this hospital, and would be glad to further its foundation. Very little progress has been made in the scheme, owing partly to the difficulty in obtaining a site, and as the College has now been brought under the Civil Veterinary Department scheme, it has been necessary to ask the Inspector-General of that Department what his requirements in this respect will be. Isolation boxes are most urgently needed for teaching and other purposes, and it is hoped that the matter may soon be settled.

The demand for Veterinary Assistants is still as great as ever. There are at present no men on the unemployed list, and we have over twenty applications for men waiting to be met. The frontier disturbances created a very great demand for veterinary assistants, and as we only had about a dozen available whom we could recommend for employment, any man, whatever his character or qualifications, was employed by the Transport authorities. During the correspondence which took place with the Military authorities when the demand for men was greatest, we discovered that there existed in the ranks of the various regiments of Native Cavalry a great number of men who had obtained the diploma of the College, but being in excess of the establishment of Salutries, were not being utilised as such in the regiments. It was suggested that these men should be sent to the front for Transport duties, with the result, I believe, that a considerable number were obtained, and worked well. In connection with this, I recommended for the consideration of the Military authorities, the advisability of maintaining a reserve of Veterinary Assistants in the ranks of these regiments, so that they would be available in cases of this kind. The scheme seems a simple way out of a serious difficulty, and its adoption seems all the more advisable owing to the fact that in very many cases the ordinary civilian veterinary assistant temporarily employed on war service is not a success. He is unaccustomed to the work and the

exigencies of war service, does not understand what his rights are, or how to obtain them, and does not maintain his proper position. In these operations the demand was so great that as a last resource I recommended that volunteers should be called for from the men employed under district boards and municipalities. This was done, and a number of men voluntarily offered their services. They returned, however, very much dissatisfied with the position they held, and the treatment they had received, and this was solely owing to the fact that they did not understand military duties. The employment of soldiers on work unconnected with war service, such as this, must be infinitely preferable to that of civilians, and it is hoped that the fact that the Military authorities have this year sent 23 men to be trained in place of 15 is with the idea of increasing their reserve.

In regard to the veterinary assistants who are maintained by district boards, I can only again draw attention to the very pressing necessity for the proper organisation of these men into a department, if it be desired that the full benefits should be obtained from their employment. In the majority of cases the men are capable of, and do, excellent work. Complaints are occasionally heard as to the manner in which the district veterinary assistants perform their duties, and again it may be pointed out that such complaints are futile; what is required being to avoid that which has given rise to them in the future. When it is considered that the graduates of this college, employed by a district board, have in the great majority of instances no orders to guide them, no one to tell them what to do or to see that it is done, and in some cases meet with actual obstruction in the performance of their work, it is not astonishing that in the circumstances they occasionally lose heart and do nothing. I have met with veterinary assistants in the districts whose books were taken from them immediately after they had passed their examination, who had no instruments, no medicines and no orders, and I may ask what can be expected in such cases but failure.

On the other hand, cases in which men rationally treated have done very excellent work are not wanting. I may quote, as possibly one of the best examples, the Amritsar Veterinary Hospital, started some years ago on my recommendation by the late Mr. E. Nicholl, C.I.E. That institution has at the present day a very extensive practice; is doing excellent work, and is highly appreciated by all who have seen it. There are many other such institutions which might be mentioned, and many individuals who are doing good work and are a credit to the institution which has given them their training.

An experiment which has been followed by good results was made in sending a graduate to Naini Tal in response to an appeal from the headquarter staff for veterinary aid for their chargers. The idea was to subscribe a certain sum to be paid to the man as a monthly pay, and to allow him to do private practice as well. The scheme succeeded admirably, the assistant being an able and energetic one, and now employed permanently under Government. Unfortunately it is not always possible for us to send men who would be capable of doing such work satisfactorily, but with a three years' course there would be no difficulty, and it would certainly pay horse and pony owners in isolated places to subscribe, and maintain a good man for their own work.

We have this year sent a number of men to Uganda, and have now graduates holding appointments in many foreign countries. There are plenty of volunteers for such posts.

The system of maintaining a register of the passed men, with a record of the services of each, is gradually bearing fruit, and it is becoming possible to separate the good men from the bad.

It is, perhaps, unnecessary to remark that the Lahore Veterinary College

has now a considerable reputation not only in India but in Europe as well. A considerable amount of original research work has been carried out here from time to time, and we are in touch with many scientific men interested in veterinary subjects at home and on the Continent. Much more can be done in research work and in improving the teaching when the new contagious ward is built, and when we have a proper chemical laboratory and dog hospital. Considering the great number of valuable dogs which are sent here for treatment, it is a great pity that there is not some decent accommodation for them. However, as the subject does not enter into the curriculum, it perhaps cannot be expected that Government will move in the matter. It may be remarked that we are worse off for funds which can be devoted to such subjects than any other school in India, for there seems to be no wealthy philanthropist in the Punjab who is interested in animals. The far younger Bengal Institution seems to command endless funds, and is leaving us behind in the matter of conveniences. Doubtless in time we shall be fully equipped and able to make more of the superior material available in the Punjab, for we are undoubtedly slowly progressing.

The students have this year had the advantage of a text-book on veterinary medicine, surgery, and lameness, which has cost me and the translator, Lala Prabhu Lall Hothera, of this office, fifteen months of hard work. The simple translation of an English text-book is more or less useless, as the students cannot understand it, so that it has been necessary to write a book especially for them, entering into the most detailed descriptions and directions, and simply explaining all necessary points throughout. This has not been found an easy task. The examiners report well on the effects it has had on the students, and are of opinion that the men will not so easily forget their work now that they have a text-book to refer to.

The *Vernacular Veterinary Journal* has passed through the second year of its existence satisfactorily, and has been sufficiently successful financially to allow of the price being considerably reduced, and of our illustrating some of the articles. It appears to be much appreciated, and many men write for it.

Dr. Amir Shah, Khan Bahadur, has made a very good translation of Finlay Dunn's "Medicines," a text-book on the subject which he teaches, which will be very useful to both students and practitioners.

The whole of the teaching staff have worked in usual excellent manner. Owing to the withdrawal of the Professor, Mr. Sullivan, the whole of the work of teaching medicine and surgery, management of the College, and the carrying out of the hospital work fell upon me, and, although it has been a time of drudgery, still it has been carried out. But this would not have been possible but for the loyal support of the teaching staff, and much would have unavoidably been left undone; amongst other things, the really important practical surgery class would have been abandoned had not Syed Sirdar Shah and Raja Ghulam Hussain Khan given me such assistance as allowed of the scheme being successfully carried out, and I would specially mention the work done by these two teachers voluntarily and without hope of extra pay.

Mahtab Shah, Khan Sahib, taught his subject very well, and Dr. Amir Shah, Khan Bahadur, has, as usual, given me every assistance and support. I will ask Your Honour to hand the prizes and diplomas to the successful candidates.

The Prize List.

His Honour the Lieutenant-Governor then distributed medals, prizes and certificates to the following:—

Imdad Husain, Moradabad, N.-W. P.—1st Prize for Veterinary Surgery; 2nd Prize for Bovine Medicine and Surgery; the Kettlewell Memorial Medal

for Proficiency in Veterinary Surgery; and the Principal's Gold Medal for General Proficiency.

Kishan Singh, 12th Bengal Cavalry.—2nd Prize for Surgery and Medicine, and the Kettlewell Memorial Medal for Proficiency in Medicine.

Thakur Singh, Jullundur.—3rd Prize for Bovine Medicine and Surgery.

Hukam Singh, Kapurthala.—1st Prize for Bovine Medicine and Surgery.

Ali Akbar, Gujrat.—3rd Prize for Surgery and Medicine.

Umr-ud-din, Lahore.—1st Prize for Materia Medica and Chemistry.

Masad Hussain, Rewari.—1st Prize for Anatomy and Physiology, and 3rd Prize for Materia Medica and Chemistry.

Murad Buksh.—2nd Prize for Anatomy and Physiology.

Man Singh, Rohtak.—2nd Prize for Materia Medica and Chemistry.

The following had Pass Certificates and money prizes:—Talib Ali, Amritsar; Ali Akbar Shah, Gujrat; Neaz Ali Khan, Gujrat; Sham Lall, Patiala State; Bashir Ahmed, Sialkot; Abdul Razak, Gurdaspur; Muhammad Ali Khan, 10th Bengal Lancers; Indar Singh, Amritsar; Ran Singh, 19th Bengal Lancers; Nur Muhammad Khan, 6th Bengal Cavalry; S. Muhammad Yakub, 4th Bengal Cavalry; Ragu Nandan, Jullundur; Abbas Khan, 17th Bengal Cavalry; Mehar Dad, Gujrat; Khushal Singh, 9th Bengal Cavalry; Hakim Singh, Amritsar; Kalab Husain, Karnal; Golab Husain, Amritsar; Sabir Husain, Karnal; Fazal Ali, Delhi; Pirthi Singh, 14th Bengal Lancers; Jaipal Singh, 4th Bengal Cavalry; Sarnam Singh, N.-W. P. and Oudh Police; C. B. Antie, Quetta; Ghulam Abbas, Karnal; Basant Singh, N.-W. P. and Oudh Police; Nawab Ali Khan, 19th Bengal Lancers; Nihal Chand, Amritsar; Nadir Ali Khan, 17th Bengal Cavalry.

Sir Mackworth Young's Speech.

Having distributed the prizes, His Honour the Lieutenant-Governor delivered the following speech:—

I think that the results of this year show most satisfactory progress, and I very heartily congratulate the Principal and the teachers of this College on the results obtained. It is almost unprecedented, I should say, for seventeen candidates in one subject to obtain full marks, and eight in another, even making allowance for possible leniency in the examination. There must be some cause for this, and we must look for it. It seems very clear that the cause lies in the newly instituted class of practical instruction of which Captain Pease has told us. Of course, it stands to reason that a class for instruction of this kind must contribute immensely to the efficiency of the students. And I must also mention another cause which I think has very greatly contributed to this result, and that is those most praiseworthy efforts of Captain Pease to put before the students a proper literature for study in the shape of these treatises and text-books which he has introduced, and for which, I consider, he is entitled to the greatest credit. I notice that Captain Pease still mentions the three years course as all-important to be attained and to be desired. I don't know how many students go through this, and I don't know whether any responsibility attaches to me for not carrying it out. I can only say that I will assist in any way possible. This College maintains its popularity and sends its students to various parts of the world, and it has a very wide reputation. The question of fees is one which, I have no doubt, will receive more and more attention, because in proportion as an institution increases in popularity, it is possible to make a contribution upon those who receive the benefits it confers. I have no doubt the subject will receive attention. Again we are reminded of the great want of a contagious diseases ward. Whenever wants of this description are brought to my notice on occasions like this, I always have a sort of qualm because I feel that the usual state of affairs is that the local government has to accept responsibility

for delay in making response to such requests, and to plead the inevitable excuse of want of funds. But I am very much relieved to find that the responsibility does not rest with the local government, but it is somebody else who is considering the question, and it does not yet fall to my lot to give the unfortunate decision that I cannot do it this year. I sincerely hope that, when the requisition comes before me, I may be able to deal with it in a different way, and to give a hope of this great need of the College being speedily met. Captain Pease has mentioned another need in the way of a chemical laboratory. In regard to this subject, I have no opinion at present, though it does occur to me as a possibility that a course of chemical instruction might be obtained from the Lahore Medical College, and that it might be possible, considering the proximity of the two institutions, to associate the students to the Lahore Medical College for this purpose. This, however, is only thrown out merely as a suggestion. *Primâ facie* it seems desirable, when you have a large and efficient institution which has special facilities for imparting knowledge in a certain branch of science, to make use of that institution, instead of starting another which may be less efficient by being less wealthy. I am speaking without books, and I may be told that horses require such very different medicines from what men do, that it is quite impossible to assimilate a course of chemistry for the one school with that required for the other. It seems to me that there is a great deal in what Captain Pease says as regards the advisability of having a reserve of military veterinary officers with the various regiments. The past year has been one of great pressure, and I am sure that none of us would wish that that pressure should be repeated year after year, because we none of us wish to have frontier disturbances as annual occurrences. But there is no doubt that as veterinary science becomes more and more appreciated in the army and in our institutions in this country, there will be a greater demand year by year for qualified assistants. I have no doubt that the military authorities will be disposed to view favourably such a suggestion as is now being made. Our civil veterinary assistants are rather like sheep without a shepherd. That we cannot deny. One is very sorry to hear that, owing to want of supervision and want of experience, their attachment to regiments did not altogether result in satisfactory reports. That is a question which is under consideration. Possibly in this respect the local Government may have to accept responsibility for a certain amount of delay, but I believe also that we had some difficulty in persuading the Inspector-General to take a view of the case, which we thought would place the matter upon a sounder basis. We have a project for assimilating the supervision of the Imperial department with that of the provincial, and it seems to us that in this manner it will be possible to obtain, to some extent at all events, the supervision which is required without very much extra expenditure, which I am afraid for some time would introduce a barrier towards any such improvement. Meanwhile, there are minor matters which it seems to me ought to be taken up at once. One is very sorry to hear of some of these students having lost their books and instruments and having no medicines, and I commend this subject to the attention of the director, who, I am sure, will see that the fault does not lie with any agency of Government. I presume that the local boards would give them the necessary instruments and appliances if the matter were put before them in a proper way. We can see, at all events, how in Amritsar the students are taken care of, and how in connection with that name which has been so often mentioned in connection with local improvements, the late lamented Mr. Nicholl—a very satisfactory work is being carried on and considerable benefit results to the community. In conclusion, I have to express my apologies to Captain Pease, that under pressure from the Imperial Government I was obliged to ask him to give up the valuable services for a time of

Veterinary-Lieutenant Sullivan for appointment to an independent charge elsewhere. I know that Captain Pease did not grudge him his preferment, but was glad to get him back. I congratulate Captain Pease and the staff and tender my acknowledgments to them.

His Honour, accompanied by Captain Pease and the European guests, afterwards went around the College and made an inspection.

CONTAGIOUS DISEASES ANIMALS ACT, 1894 and 1896.

SUMMARY OF RETURNS OF OUTBREAKS, for the four weeks ending March 26th, 1898.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Glanders. (including Farcy).	Rabies.	Anthrax.	Sheep-Scab (for month of February).
	Outbreaks 189 Slaughtered 3,012	Outbreaks 41 Attacked 65	None	Outbreaks 36 Attacked 37	Outbreaks 351

SCOTLAND.

None	Outbreaks 7 Slaughtered 190	Outbreaks 1 Attacked 36	None	Outbreaks 19 Attacked 33	Outbreaks 12

IRELAND (for four weeks ending April 2nd).

None	Outbreaks 31 Slaughtered 466	None	Dogs 3 Other animals 2 Destroyed 17	None	None

SUMMARY OF RETURNS OF OUTBREAKS, for the four weeks ending April 23rd, 1898.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Glanders (including Farcy).	Rabies.	Anthrax.	Sheep-Scab (for month of March.)
None.	Outbreaks 231 Slaughtered 4,081	Outbreaks 49 Attacked 70	Dogs 2 Other animals 0 Destroyed 11	Outbreaks 36 Attacked 76	Outbreaks 143

SCOTLAND.

Pleuro-Pneumonia.	Swine Fever.	Glanders (including Farcy).	Rabies.	Anthrax.	Sheep-scab (for month of March).
None	Outbreaks 25 Slaughtered 655	Outbreaks 1 Attacked 17	None	Outbreaks 17 Attacked 26	Outbreaks 8

IRELAND (week ending 16th April—no other returns).

None	Outbreaks 11 Slaughtered 59	None	Dogs 1 Other animals 2 Destroyed 17	None	None

SUMMARY OF RETURNS OF OUTBREAKS for the four weeks ending May 21st, 1898.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Glanders (including Farcy).	Rabies.	Anthrax.	Sheep-scab (for month of April).
None	Outbreaks 254 Slaughtered 4,507	Outbreaks 63 Attacked 100	Dogs 4 Other animals 0 Destroyed 2	Outbreaks 40 Attacked 48	Outbreaks 78

SCOTLAND.

None	Outbreaks 8 Slaughtered 361	Outbreaks 3 Attacked 13	None	Outbreaks 21 Attacked 30	Outbreaks 9

IRELAND (for the four weeks ending 14th May).

None	Outbreaks 26 Slaughtered 401	None	Dogs 4 Other animals 2 Destroyed 38	None	None

Legal News.

APPEAL—JOHN CROALL & SONS *v.* JAMES C. LAW.

THIS appeal was presented against a judgment of Sheriff-Substitute Hamilton, Edinburgh, in an action by John Croall & Sons (Limited), Royal Horse Bazaar, Castle Terrace, Edinburgh, against James C. Law, 24, Learmonth Terrace, for £25, the value of a horse hired by the defender on 23rd March, 1897, for the purpose of driving three young ladies, his sisters, to the hunt races at Wairdlaw, near Linlithgow, and back. The case for the pursuer was that the defender's coachman so overdrove and thrashed the horse that laminitis (founder), causing death, resulted. The Sheriff-Substitute found that that had not been proved, but that the laminitis was due to some stomachic derangement induced by improper, or at least injudicious, dieting of the horse on the Monday and Tuesday before the defender had it on hire. The defender was accordingly assoilzied, with expenses.

The Division to-day dismissed the pursuers' appeal, and affirmed the judgment of the Sheriff-Substitute, with expenses.

The Lord Justice-Clerk said he thought it was very much to be regretted that this case, which really turned upon a question of £25, should have led to the very, very extended proof they had there, amounting to something like sixty-five or seventy pages of print. He must say that, looking to the number of questions which apparently were put by counsel in the case, and also to the way in which the evidence was taken down, a great deal might have been spared without loss or disadvantage to the proper ascertainment of the facts. The case was not one of a horse being returned with some injury upon it caused directly by some external violence; it was the case of a hired horse being returned at the end of a journey, and then found to be in a state of acute disease. In such a case as that, it would be a very difficult question of fact whether the disease was not incipient before the horse started, and made its appearance in the natural course of things. Particularly as regards laminitis, his Lordship could speak from his own personal knowledge and experience—and to his cost—that a horse perfectly well in his stable suddenly developed the disease on the road, and could hardly move along at all. The case made by the appellants was that the horse must have been subjected to improper treatment in the way of overdriving. As regarded that, the difficulty of the appellants' case was that, according to the distance traversed, and the time taken, the pace was not more than six miles an hour, and therefore his case was that the horse must have been in the first instance subjected to overstraining by forcing, and made to go at a very fast pace, which resulted in its going slowly afterwards. All his Lordship had got to say about that was that it was quite certain that if the horse had been driven at a dangerous rate for its health, that would have manifested itself in foam upon its coat, and the foam would have been encrusted when it arrived at the end of its journey, supposing it had slowed down in the later stages. There was no proof of anything of the kind. To come to any such conclusion they must hold not only that the coachman who drove the trap, but the three young ladies in it, were all telling what they knew to be absolutely untrue—namely, that the pace at which it went the whole time was a slow pace. The Sheriff-Substitute saw them and believed their statement that the pace was a very moderate one indeed. It was said that the disease was caused by violence, and that there were weals on its back. If the horse had been subjected to treatment that could be called cruel in that sense, the veterinary surgeon, who examined it next day, when he had the advantage of having taken the skin off, would be perfectly able to say whether there were any

injuries that caused the disease, but there was no evidence to show that the horse developed the disease from any such cause. His Lordship was accordingly of opinion that the animal did not get laminitis from anything that happened on the way out or on the way back, and that the journey tended to develop the disease which must have been there before.

Lord Young concurred. He could not, he said, help expressing his regret that there had been this litigation, although it was comforting to think that it was between parties who were quite able to bear the cost. When the pursuers, or their responsible servants, handed over the horse to the hirer, they no doubt thought—and probably upon reasonable grounds, having no reasonable grounds for thinking otherwise—that it was in good health and condition, and fit for the purpose for which it was hired. It did not follow, and he did not think it was the fact, that that was so. He inclined to think, with the Sheriff-Substitute, that it was not in good health and condition. He repeated that without imputing to the pursuers or their servants any idea that it was not in good health and condition. He inclined to think, with the Sheriff-Substitute, that it was not; that it then had this disease upon it, although it had not developed then so as to manifest itself to the pursuers' servants, and that the disease did manifest itself in the course of the outward journey for which it was hired. That was really knocking away the foundation of the pursuers' case. The pursuers, in their condescendence, said that the defender's coachman "grossly ill-used the horse by driving it at a furious pace. He severely lashed the animal with his whip without any regard whatever to the animal's health. He broke the whip over it, beat it with the whip shaft excessively, and gave it no proper rest during the journey, which is about twenty miles long." His Lordship had no hesitation whatever upon the evidence in negativing that averment. He thought it was not proved upon the evidence, and he was prepared to negative it in point of fact. The next averment was that the "horse, in consequence of the treatment it received, was not in a condition to undertake the journey home, yet the defender's coachman culpably and recklessly forced it to undertake it; and during the homeward journey the coachman still continued to beat the animal recklessly with the cane shaft, with the result that it arrived in Edinburgh in the evening in an exhausted and bruised condition, and suffering from acute laminitis." Here his Lordship desired to say, although it was not necessary for the Court to decide it, that if the hirer of a horse found that in the course of a journey—or, confining his remarks to the case suggested here by the pursuers—at the end of the outward journey, that the horse was in a bad state of health, suffering from some complaint or other, or that it would be unfair to it and unsafe for it to drive it home, he was bound to abstain from driving it home. His Lordship thought he was. But he thought upon the evidence here that it was not established that there was any bad faith on the part of the coachman or the young ladies who were his mistresses, and that he had no reason to believe that the horse was in such a state of bad health that it would be unfair, inhumane, and dangerous to drive it home. Upon the evidence his Lordship would have been prepared to affirm that the coachman was in good faith, reasonably good faith, in proceeding to drive it home, for it was according to the uncontradicted evidence in this matter that the horse made the return journey better than it had made the outward journey, going at a comparatively slow rate, but still going better and more steadily on the journey home than it did on the journey out. Therefore, his Lordship was prepared to negative that averment also. He thought the truth of the matter was that the horse was suffering from disease when it started, unknown to the pursuers, who would not have sent it out if they had thought it was, and that the disease developed itself in the course of the journey; that the coachman not unreasonably thought that these manifestations were really

due to sluggishness and laziness, and that he acted as a man reasonably might in such circumstances, and that there was no gross cruelty on his part, for which he or his master was responsible. His Lordship thought that if there had been any such cruelty and misconduct—any conduct which warranted and countenanced the averments which were made here—his conduct must have been observed by the young ladies whom he was driving, and who could not fail to have observed it. But they saw nothing of the kind. He affirmed therefore, that in point of fact there was uo such conduct on the part of the coachman at all, and that the horse died from disease which had developed on the journey,

Lord Trayner also concurred. He was not, he said, prepared to affirm on the evidence that the horse was perfectly sound and free from disease when handed over by the pursuers to the defender; while he was prepared to affirm (1) that the horse, when in the custody of the defender, was used for the purpose for which it was hired and no other; (2) that the defender used the horse with reasonable care; and (3) that the disease from which the horse died was not shown, and could not be, upon the evidence, reasonably attributed to the treatment which it received from the defender.

Lord Moncrieff was of the same opinion. He thought the fair result of the evidence was that the disease was on the horse when it was sent out to the defender. There was no doubt that laminitis might have resulted from over-exertion or from over-driving, but these causes were distinctly negatived by the evidence. There was no evidence that the horse was not properly treated at the farm where it was put up.

Counsel for the Pursuers and Appellants—Mr. Salvesen and Mr. T. B. Morison. Agent—P. Morison, S.S.C.

Counsel for the Defender and Respondent—Mr. Jameson, Q.C., and Mr. F. T. Cooper. Agent—James F. Mackay, W.S.

Correspondence.

To the Editor of THE VETERINARY JOURNAL.

STAMFORD, *April 14th*, 1898.

SIR,—I have pleasure in bringing to the notice of the profession new kinds of double embryotomy knife and hooks, which have been tried and found of excellent service by several practical veterinary surgeons. Either instrument is very light, yet strong, measures 27 inches long, and the screw which works the knife and hooks is enclosed in a metal case only one inch in diameter.

The advantages claimed for these instruments over those previously used are that the hooks or knife can be opened or closed whilst in situ by the operator's assistant, simply by turning a cross handle outside the vulva either to the right or to the left.

The knife or embryotome consists of two slightly concave blades made to meet at their points when closed, so fitted that the cutting edge when the instrument is withdrawn from the uterus after being closed upon any limb, holds like a double-jointed hook until the part is severed, which is done by simply pulling the cross handle.

There is no possibility of injuring the maternal parts by either the knife or hooks.

The Instruments are patented and will be known as "Gooch's external screw Embryotome and Hooks." The sole maker is Mr. Huish, of Fisher Street, London, W.C.

(Signed) GEO. FRED. GOOCH.

NEW ASPIRATOR AND INJECTOR.

MESSRS ARNOLD AND SONS, London, have just completed a new "Aspirator and Injector" at my design, and as used by me in operating for the removal of "Bog Spavin" and distension of any joint with excess of "synovia."

I have had great success with this operation all over Scotland where Bog Spavin is very prevalent. The description of the operation is as follows:—

First, charge the small syringe with the liquid you intend to inject into the hock, then withdraw the fluid from the hock by puncturing the joint with a Trocar and Cannula, and fitting the nozzle as aspirator into cannula and ejecting out at side of syringe through an indiarubber tube into a dish containing water, so that no air gets back into syringe after sucking all the fluid out, then close the side tap and inject fluid into joint.

Where this instrument is advantageous over any other, in my opinion, is in the fact that the whole operation is performed without the admission of any air, practically speaking.

JAMES G. DEANS, M.R.C.V.S., Bishop Auckland.

The Aspirator consists of a tap with rubber cork to fit an ordinary three half-pint wine bottle, the aspirating needle is connected to the tap by means of a rubber tube.

The Aspirator is also fitted with a milk tube and can be used as an exhauster in mammitis of the cow; it easily removes all the milk and clots from the udder, which is very difficult to do in the ordinary way owing to the tenderness of the gland and the restlessness of this animal.

To use the instrument: Obtain an ordinary three half-pint wine bottle; place in it about two or three drachms of ether sulph. meth.; put in the cork with the tap open, then hold the bottle in a bucket of hot water, In a minute or two the ether begins to boil, expelling all the air from the bottle. When nearly all the ether has gone, withdraw the bottle from the hot water, close the tap, allow the bottle to cool, and then plunge it into cold water. There is now a vacuum in the bottle. The needle and rubber tube are now connected to the tap. After the needle has been inserted into the subject, the tap should be only opened slowly at first, as the suction is very great.

The advantages of this instrument are:—

(1) It is simple in construction, and cannot get out of order as the ordinary complicated aspirators.

(2) It is light to carry; bottles to fit the instrument can be obtained at any house.
(3) The cost is little as compared with other aspirators.
(4) It can be used as an exhauster in mammitis of a cow. The clots of milk pass easily from the gland into the bottle

It is made by Messrs. Arnold & Sons, London.

ROBERT PLATT, M.R.C.V.S.,

Llangollen.

Extracts from Foreign Journals.

RABIES.

(Being a communication to the *Société Centrale de Médecine Vétérinaire*, by Professor V. Galtier, of Lyon).

Seats of the disease—Purity and resistance of the virus of rabies—Mode of inoculation—Absorption of the virus—Mode of action.

I. Rabies is always transmitted to animals and to man by inoculation of the saliva. The virus of rabies flourishes principally in the nervous centres; we know that it exists not only in the buccal saliva and in the nervous centres, but that it can be met with also in certain organs (salivary glands, lachrymal gland, pancreas and teats). I have shown that it may in exceptional cases exist in the kidney. The following parts of the body are considered exempt from its virulence: the muscles, liver, spleen, blood, lymph, bile, semen, urine, excremental matters, etc. The milk may sometimes become virulent, but this is a very rare occurrence. It is in the nervous centres that we meet the virus in abundance and in a state of purity. And yet it may be met with in the medulla, the bulb, and the brain, mixed with germs foreign to rabies. Are not the phlegmons and abscesses which have been sometimes seen to occur in human patients, following on the injections which the antirabic treatment requires, due to coincidences of this nature? I have on three occasions chanced to meet with a very dangerous septic microbe in the nervous centres of dogs that have died of rabies in the streets. Seven-eighths of the animals inoculated with the bulb of the dog died, in one, two, three, and four days, of the disease caused by this microbe, and the others only succumbed later on to rabies. This microbe rapidly caused the death of the animals (rabbits and guinea-pigs), which had been inoculated by intra-peritoneal, sub-cutaneous, and nasal injection, and even by simple instillation beneath the eyelid. It grew easily; but it soon got attenuated when exposed to contact with the air. It was a fine bacillus, in some cases almost round, often two or three times longer than it was broad, sometimes strangled in its environment, mobile, colouring easily, growing more readily on the stove than in the temperature of the laboratory, ærobic bnt in most cases anærobic, not liquefying gelatine, making bouillon opalescent, and afterwards forming a powdery, whitish precipitate at the bottom of the balloon.

Rabic matters, when left in water, preserve their virulence for a long time; I have demonstrated that they may remain active 20, 25, 30, 35, 38 days, and even more if a congelation does not take place. In one experiment, I was able to obtain rabies with fragments of bulb which had remained 49 days in water, or 28 days without congelation and 21 days with a congelation between 0 and 8 degrees below zero centigrade.

II.—Rabies may be experimentally transmitted by different methods of inoculation, by intra-cranial, intra-nervous, intra-ocular, intra-muscular, intra-pleural or intra-peritoneal, intra-testicular, intravenous and subcutaneous

injection, and by intra-dermic punctures and scarifications. Intra-cranial, intra-nervous, and intra-ocular injections are the most certain methods, but the others may sometimes be of service. Inoculation by puncture is to be recommended when we have at our disposal substances which are impure, tainted, and in course of putrefaction, such as saliva, a corrupted nervous substance, proceeding from a dead body in decomposition, or from a dead body exhumed after being buried for several days, and every other kind of substance more or less in a state of corruption. By applying it to a suitably prepared surface (washed, scratched, punctured, scarified), complications of a septic nature may be avoided, and rabies seen to declare itself if the substance employed had preserved any of its virulence. This method of procedure has on numerous occasions rendered me real service; it is advantageous to adopt it for the cases just specified. Several subjects for experiments will be taken, guinea-pigs for preference, for intra-cutaneous inoculation is not certain to produce rabies in all the animals inoculated. As a result of this method of inoculation, the disease is evolved just as when it is the result of a bite, sometimes in the excited form, sometimes in the paralytic. Summarising 15 experiments, in which 104 guinea-pigs were inoculated, by scarifications on the back or nose, with some of the rabic bulb of dogs, rabbits, or guinea-pigs, I find that the results have been positive 99 times, and negative only five times. It is, therefore, quite an established fact that inoculations by means of well-made scarifications almost always cause rabies in the guinea-pig. Incubation varied between 11 and 31 days; once only it took 40 days; often, but not always, incubation took a shorter time (two, three, and four days) after inoculation on the nose than after inoculation on the back; the guinea-pigs inoculated by scarifications on the nose generally, all things being equal, became affected with rabies sooner than those inoculated on the back, but there were exceptions, and I have sometimes seen inoculation on the back cause rabies quicker than inoculation on the nose. I have sometimes had the opportunity of seeing the guinea-pigs affected transmit the rabies, by biting, to their fellows. As a result of inoculation by scarifications on the nose or on the back in guinea-pigs, the rabies is most frequently excited and furious, at least at its beginning; you may sometimes see subjects become very furious, very agitated, and excessively vicious, and yet preserve a remnant of an appetite, eat at moments, and live three, four, five days, or even more, although that is an exceptional occurrence. Subcutaneous injection, besides the fact that it means exposure to septic accidents, when impure products are concerned, is an uncertain means of developing rabies, even when it is made with pure virus. It often fails in the dog, the sheep, and the goat; it does not always succeed—far from it—in the rabbit and in the guinea-pig. The result of my exceedingly numerous attempts made on these latter species is that guinea-pigs and rabbits inoculated in this way may become attacked by rabies, some in the proportion of twenty to thirty and others in the proportion of fifty to forty; that subcutaneous injection, which is very untrustworthy in the case of the guinea-pig and above all in that of the rabbit, may nevertheless give more numerous positive results, especially in guinea-pigs, when strong doses of the virus are employed; that in some cases, however, the subjects which have received a weaker dose may become ill; that the incubation and evolution of the disease are, with slight modifications, similar to what takes place after inoculation by scarifications.

Intra-muscular injection, which is with reason vaunted by Helman as a sure method of rabic inoculation, deserves recommendation especially when a pure virus is at one's disposal; it generally succeeds very well with rabbits and principally with guinea-pigs. Comparative examination of very numerous experiments which I have made in this department, in rabbits and guinea-

pigs, leads me to the following conclusions: of the 126 guinea-pigs inoculated in this manner with rabic animal bulb, 122 caught the disease, and only four remained immune; of 52 rabbits that received rabic bulb by intra-muscular injection, there were five that did not become rabid and 47 caught the disease. The dose of virus inoculated is far from being unimportant; the inoculations of minimum doses are almost the only ones that sometimes fail. Intra-muscular injection is far surer than subcutaneous injection and even than intra-dermic inoculation; it is only very rarely that it fails in the rabbit, and in very exceptional cases in the guinea-pig. It is so trustworthy in the guinea-pig as to be almost equivalent to intra-ocular injection; and it offers real advantages from the point of view of the facility and celerity of its execution; on the other hand (an advantage over intra-cranial and intra-ocular injection) it allows of the use of strong doses, which is advantageous when one wishes to make trial of substances which may be unfertile in virus. Intra-muscular injection made on the back is more trustworthy than inoculation by scarificatious made in the same region. To effect intra-muscular injection, the muscles of the back, those of the thigh, those of the shoulder, and those of the neck may be chosen; in all these regions positive, precise, and sufficiently prompt results may be obtained with the rabic virus.

Incubation is very nearly similar in both the rabbit and the guinea-pig, with a slight minus difference for the latter. It is generally concluded between seven and eighteen days when inoculation is made in the muscles of the neck, between nine and twenty-five days when the virus has been inoculated into the shoulder or into the thigh; it may be shortened, reduced to seven, eight, nine, ten, eleven, twelve, thirteen, and fourteen days when a strong dose of virus is employed. When intra-muscular injection is well performed, not only does it cause rabies almost with certainty, if the matter inoculated is virulent, but it is not accompanied by any accident of such a nature as to compromise the life of the inoculated animals or the success of the inoculation. Intra-muscular injection produces paralytic rabies, as well in the guinea-pig as in the rabbit; the disease, after this method of inoculation has been employed, invariably begins with paralysis of the member inoculated; afterwards, paralysis in a more or less rapid degree gains upon the member opposite and the anterior or posterior quarters, according as the virus has been inserted into the muscles of the shoulder or of the thigh. Inoculation by intra-testicular injection in the guinea-pig is as sure as intra-muscular injection; the malady may declare itself at the end of nine to eighteen days, and it begins with paralysis of a hind limb or of the hindquarters.

To sum up, intra-muscular inoculation of the virus of rabies is a method which deserves to be recommended by reason of the facility and celerity of its execution, and because of the advantage it gives us in allowing the employment of comparatively large doses.

Intra-serous injection, without being an absolutely certain process, allows, however, of rabies being obtained, just like subcutaneous injection, as my researches first showed, and afterwards those of Di Vestea and Zagari. On many occasions, in 1881 and in 1891, I established the fact that rabies could be obtained by injecting the virus into the pleura or into the peritoneum of the sheep, goat, and dog. On several occasions afterwards I had an opportunity of trying this method of inoculation on guinea-pigs, rabbits, sheep, goats, and dogs; I obtained rabies in a half, a third, a fourth, and a fifth of the animals inoculated, according as I employed or not a strong dose of virus.

III.—When deposited by bite, prick, or any wound whatsoever, by licking or impregnation of an absorbent surface, the rabic virus may be rapidly absorbed. In numerous cases rabies has been seen to declare itself, on men

or beasts, in spite of deep cauterisation made more or less rapidly some hours, an hour, a few minutes after the bite, whether with a red-hot iron or with a chemical caustic. The result of former researches, which I made with the view of appreciating the rapidity of absorption of the rabic virus, was that its diffusion beyond the spot inoculated could speedily extend after inoculations and bites. On amputating the inoculated portion of the ear of the rabbits used for the experiment, an hour, half-an-hour, twenty minutes after inoculation, I did not succeed in preserving them all; I got the same results on the rabbits and guinea-pigs that had been cauterised by the red-hot iron, azotic acid, or tincture of iodine, an hour, thirty, and twenty minutes after inoculation. I have repeated my experiments in the last few years and obtained similar results. I have further established the fact that in some rare cases cauterisation did not hinder development of the rabies, even when it took place from five to ten minutes after inoculation; also, although the efficacy of cauterisation is more and more probable when it is made at a moment more and more close to that of the bite, I make it a rule, in the case of persons who have been bitten and then cauterised in a more or less hasty fashion, to advise them to undergo the antirabic treatment.

IV.—Rabic contagion provokes the disease by means of the toxic substances whose formation it brings about as it shoots up and flourishes in the nervous centres. Rabic emulsions employed in strong doses may produce a more or less speedy poisoning, when they are injected into the circulation, or into a serous organ (peritoneum or pleuron), or into the trachea.

Experiment of 10th March, 1895.—Two sheep and a goat having each received into the peritoneum a strong dose of an emulsion prepared with the nervous centres of a dog that had died of rabies, behaved in the following manner: The goat showed nothing uncommon after inoculation till the nineteenth day, when it became rabid and paralysed, to succumb at the end of two days; the two sheep, more sensitive than the goat, fell ill a few minutes after injection (gasping, convulsive, and painful respiration, weakness, quasi-paralysis of the hind-quarters, tottering gait, walking backwards, mouth gaping, saliva in great quantities and viscous, grinding up the teeth, efforts to vomit); afterwards a relative improvement seemed to set in gradually, but the two subjects remained weak and breathless and succumbed the next day, showing renal and cerebro-spinal congestion, ecchymoses on the lung, pericardium, and endocardium; inoculation of their bulb did not cause rabies; their death was due to a toxication provoked by the matter inoculated.

Experiment of 20th April, 1895.—Two dogs having received each of them, into the pleuron, a strong dose of rabic emulsion prepared with the nervous centres of a dog that had died of rabies, were both poisoned; one a few seconds after injection exhibited nervous symptoms, convulsions and paralysis; death took place next day; the other a few minutes after injection was seized with vomitings four times in succession, showed weakness, and afterwards recovered, to fall rabid the thirty-eighth day; for three days it showed signs of rabies; recovery supervened, and a year afterwards the animal was in good condition.

Experiment of 11th May, 1895.—The brain, cerebellum, and bulb of two dogs that had died of rabies were emulsioned with 350 c.c. of distilled water and 50 c.c. of glycerine; the emulsion was then put to filter through paper until 90 c.c. of liquid were obtained, which were then injected into the pleuron of a middling-sized dog. A few instants after the injection the animal became became restless and agitated; its look became beseeching; it began to loll its tongue every moment or two, like a dog that has just been running; general sensibility became rapidly deadened, and general weakness showed itself at the same time; standing upright became painful and difficult; melancholy, stupefaction, prostration and somnolence showed themselves in

the fourth, fifth, and sixth hours following the injection; the conjunctivæ became red; the animal seemed to sleep standing, bent on its legs, lay down or let itself fall, and remained with its nose resting on the ground; once it drank a considerable quantity of water, bending one of its limbs constantly and lapping in a clumsy and irregular manner; it could not walk. At the end of a few hours it seemed a little better; the next day its condition continued to improve and the animal got completely better—to become rabid at the end of twenty-three days.

Experiment of 16th May, 1895.—The brain, cerebellum, and bulb of two dogs that had died of street-rabies having been emulsioned in 540 c.c. of distilled water, supplemented by 60 c.c. of glycerine and put to filter through paper until 300 c.c. of liquid were obtained, a yearling bullock received the whole of this dose in the trachea. After this injection, and in less than an hour, the subject became very tired (loss of appetite, weakness, prostration, breathlessness, trembling), and remained in this state for the whole of the day on which inoculation took place; the next day it seemed almost quite well again, but the day after it fell into the same state, and died the fifth day after, having become paralysed. On autopsy, congestion, exudations and hæmorrhages on the surface of the nervous centres, and hæmorrhages in their coating were noted. The bulb, inoculated by trepanning to rabbits, did not give them rabies; the bullock, therefore, died from poisoning; it had at first shown symptoms of immediate toxication, and afterwards symptoms of paralytic toxication following after a short incubation.

These experiments, and others of the same kind made on dogs and sheep, by intra-tracheal, intra-peritoneal, or intra-pleural injection, show quite clearly that a rabic poison exists. On the other hand, I have on numerous occasions obtained the same demonstration when operating on rabbits. By emulsioning rabic nervous centres in glycerinated water, and injecting into the veins strong doses of the liquid obtained by filtration through paper of these emulsions, I caused the following results: rabbits showed themselves toxicated at the end of a few minutes; showed prostration, weakness, paralysis, and somnolence, and died rapidly; others, after having showed themselves toxicated, and after showing the symptoms mentioned above, got better. Some in course of time became rabid; others, finally, the doses being the same, did not appear inconvenienced.

The toxicity of rabic substances is not completely destroyed by a heat of 100° to 105° centigrade.

Experiment of 20th May, 1895.—A goat having received into the trachea a filtered decoction of two cerebellums of rabic dogs of 250 c.c. became almost at once very tired. At the end of half-an-hour there were noticed stiffness of the limbs, flow of a thick saliva, movements of impatience; at the end of an hour the animal fell, become excited, struck with its head against the ground, bleated in an unwonted manner; soon the limbs grew stiff, the head fell back on the shoulder, and death supervened after a few convulsive shudders.

Experiment of 24th May, 1895.—A sheep having received into the trachea 150 cubic centimetres of liquid obtained by filtration on paper of a decoction of nervous centres from rabic dogs—this decoction being brought up to 105° in the autoclave—died toxicated at the end of three-quarters of an hour, after giving signs of breathlessness, efforts to vomit, excitement, weakness, and paralysis; on autopsy strong congestion of the nervous centres was discovered.

I have ascertained by other experiments on the goat, sheep, and rabbit, that heating to 100°, and even to 105° cent., does not completely destroy the rabic poison. (I do not say the *rabic virus*). Finally, I have noticed that rabbits which had stood a strong dose of emulsion sterilised by heat, could afterwards resist fatal doses of non-heated poison.

Notes and News.

A HORSE-CLOTH FOR UGANDA.—A special pattern of clothing, designed by Mr. W. J. Stordy, veterinary officer, Uganda Transport, is to be worn by riding ponies night and day while passing through the "fly district" on the road from Mombasa to Uganda. It consists of a head-piece and body-piece only, and the eyes and nostrils of the animal are protected by mosquito nets. The value of the clothing is expected to be of great service in the transport work.

GLANDERS IN GLASGOW.—Professor M'Call, in his quarterly report to the Local Authority of Glasgow under the Diseases of Animals Act, 1894, says:—During the quarter there have been seven separate centres of glanders dealt with, and 111 horses removed, slaughtered, and *post-mortemed* under licence of your Local Authority. It is but just, however, to mention that not more than a dozen of the slaughtered animals presented during life clinical symptoms of glanders, and that the bulk of all the animals slaughtered were old and worn-out horses. Of the seven centres of disease dealt with during the past three months three were new, and only implicated one horse in each centre, so that the disease (glanders) is not spreading within the jurisdiction of the Local Authority of Glasgow, and if the Board of Agriculture would only allow the Local Authority to use "mallein" in the way and to the extent they desire, and have so fully and frequently explained (both in writing and by deputation), the disease, if not eradicated, could at least be reduced to that extent as to cause neither Local Authority nor stock proprietors more than a passing thought. The returns further show that between 12th March and 2nd April twenty-one horses were affected in the stables of the Glasgow Tramway and Omnibus Company, situated in different parts of the city. It was stated that these horses had been killed, and the regulations of the Local Authority carried out; and, further, that the supposed existence of glanders having been reported by the owners, and the horses killed by order of the Local Authority, the sum of £2 falls to be paid for each horse.—*Scotsman*, April 21st.

Reviews.

EXAMINATION OF HORSES AS TO SOUNDNESS AND SELECTION AS TO PURCHASE. BY EDWARD SEWELL, M.R.C.V.S.L.

IT is with feelings of great relief that one lays this book down, as it makes one's brain tired in trying to comprehend some of it, and in trying to understand how anyone could possibly know "where one was" after its perusal. To begin with the composition is very faulty, and the meaning of many sentences is obscure. For instance,

Stifle-joint—Notes should be taken of the condition of this joint in passing, and enlargements here looked for; but, as a rule, one does not find horses suffering much from diseases of the stifle-joint luxation, or dislocation of the patella, a small bone that is situated in front of the joint being the chief trouble, and if this has occurred more than once, as it frequently does if it takes place at all, a thickening or an enlargement of the parts is usaally met with.

Laminitis.—Should there be a number of rings round the horn, you may be sure laminitis is present, and of a chronic nature, when the horse should of course not be purchased.

There are often present on the horn of the feet of young horses a number of rings called grass rings; these arise from the horse being out in wet paddocks, and if one is not very careful these rings may be mistaken for those due to laminitis. But the fact of the

horse being young, and the absence of any heat in the foot, reveals their true character.

Further on, the author refers to a £350 horse, which "apparently went sound," and yet "the feet had every disease that a horse's foot could possibly be afflicted with." This horse, afflicted with laminitis, vanicular disease, quittor, canker, thrush, sandcrack, false quarter, and a dozen or so other well recognised diseases of the feet would have made its owner's fortune as a side show at a fair.

Here is a description of "broken-wind"—which, to the writer, is hardly sufficiently definite :—

In the case of broken-wind proper there is no noise made, but the animal respires very rapidly, and the abdominal muscles are brought into play to assist in the *expiration* of air, the flanks heaving heavily—like a bellows, in fact.

Some of the plates of the teeth are good. The author is rather misleading when he says that the two-year-old incisors resemble the five-year-old incisors; this is contrary to general experience.

Enough of criticism. The book is of little use to those desiring accurate knowledge, and it is a matter of regret that such a well got-up book should contain such indifferent matter.

ANNUAL REPORTS OF PROCEEDINGS UNDER THE DISEASES OF ANIMALS ACTS, ETC., ETC. IN THE YEAR 1897.

THE first noticeable feature in these reports is the prominence given to the veterinary department. In its first report, by the chief veterinary officer, we have a most interesting history of pleuro-pneumonic contagiosa since its first appearance in this country. Although it is now almost a disease of the past, yet we are not free from it, and to those younger practitioners who have had little experience, we would strongly commend its perusal.

In 1895, it was considered a matter of great congratulation that the disease had been eradicated, but, unfortunately, in 1896, the number of outbreaks was increased from one to two, and in 1897, from two to seven. And the number of diseased animals from one in 1895, to nine in 1896, and to 46 in 1897. This gradual increase is apt to create a feeling of uneasiness, and it behoves all inspectors specially, and all veterinary surgeons in general, to keep a most watchful eye in cases which are in the slightest degree suspicious, so as to assist the Veterinary Department of the Board of Agriculture to attain its great ambition, and that is the complete eradication of this disease from Great Britain and Ireland.

It is a matter of regret that the etiology of the disease is given purely from foreign authorities. Have we no men in this country who are worth quoting?

Etiology.

The etiology or cause of pleuro-pneumonia has, ever since its infectious nature was accepted, been a subject of inquiry by many of the leading scientists, including bacteriologists, more particularly abroad. Friedlander, in his work on Infective Diseases of Animals, states that after Dr. Williams, Zuon, Hallier, Weiss, Pütz, Sussdorf, Brozzala, Bruglants, Verriest, and Luistig, had been engaged in the task of investigation of the contagion, Pols and Nolen, of Amsterdam, in 1886, discovered a round micro-coccus, which they believed to be the cause of the disease. Inoculation experiments were conducted by them upon upwards of a hundred cattle with pure cultivation of this organism, but none of the animals became infected with typical pleuro-pneumonia. M. Pasteur carried out investigations with the same object, but he abandoned the inquiry because he was unable to discover any medium in which the specific organism could be cultivated. More recently

Professor Arloing, of the Lyons Veterinary School, made the announcement that he had discovered an organism, which he called the *bacillus pneumo-liquefaciens bovis*, and which he believed to be the cause of pleuro-pneumonia, but up to the present time no pathogenic organism has yet been discovered which is capable of producing in the lung of a healthy animal the lesions which are peculiar to, and always present in, contagious pleuro-pneumonia.

That the disease is specific in its nature no one would now express a doubt, and further inquiries into its etiology may even yet lead to the discovery of a special pathogenic organism. There are, however, certain features in connection with this disease which render it dissimilar to the other contagious diseases of animals, and militate against successful experimental inquiries.

1st. Pleuro-pneumonia is a disease which cannot be communicated to other than those of the bovine race.

2nd. It has never been produced in an animal, even of the same class, by what is termed mediate contagion.

3rd. The infective germs appear to be transmitted only by the breath of the living diseased beast, and their power to infect ceases with the death of the diseased animal.

We append the chief veterinary officer's definition of pleuro-pneumonia, with which we must differ, as we have frequently seen it in a very acute form :—

If asked to give a pathological definition of pleuro-pneumonia, I should say that it was :—A chronic, specific, local disease, starting in the bronchi, and insidiously implicating the parenchyma of the lung, by occlusion of the bronchi and inflammation extending along the lymphatics : the other organs and the blood possess a singular immunity from the specific contamination. It is not accompanied by constitutional symptoms, and only gives obscure physical signs. At any time during the progress of the disease its existence may be manifested clinically, by the occurrence of complications—acute pleurisy or hæmorrhagic infarction with pleural inflammation—which excite high fever, with various functional derangements.

And again, we are of opinion that pleurisy and hæmorrhagic infarction are part of the disease, and not complications with some other disease.

It is not a chronic disease, nor is it a local one ; its lesions may be, but the disease itself is systemic, as characterised by the fever. Nor do we think that it commences in the bronchial tubes, as we have in innumerable microscopic examinations found the bronchi healthy, though the connective tissue were loaded with exudate ; at a slightly advanced stage the air vesicles and bronchi become occluded by the invasion of the exudate, and simultaneously the capillaries and small arteries become occluded by thrombi.

A similar pathological process may be observed in the tissues and vessels of the tail as the result of inoculation.

The coloured plates are extremely good, and show that great care has been taken in their preparation.

As regards foot-and-mouth disease, the Veterinary Department has been completely successful in keeping the country free, though they have had several alarms, which fortunately turned out to be false.

The third disease dealt with is swine fever, which, it is gratifying to note, is rapidly diminishing. The Veterinary Department have had a herculean task set them, and, in face of all fads, theories, etc., as to its non-contagiousness, its similarity to many other diseases, and the crass ignorance of many of the pig-feeders, they have at length got within measurable distance of its eradication.

We extract a portion of the report, which is of much interest.

The duties in connection with swine fever have again occupied a considerable part of the time of the veterinary officers of the Board ; during the year 1897 the *post-mortem* examinations for this disease alone have amounted to 5,386.

It is gratifying to be able to report that there has not only been a very considerable decrease in the total number of cases during 1897, but that the decrease which really

commenced in the latter half of 1896 has gradually and regularly continued from that period to the close of the year 1897.

The following table gives the number of cases of swine fever confirmed during each year since the passing of the Contagious Diseases (Animals) Act, 1893.

1894	5,682
1895	6,305
1896	5,166
1897	2,155

It will be observed that during the first two years after the Act came into force, there was a continual increase of the disease. This apparent want of success led many persons who had watched the results obtained in regard to the eradication of other contagious diseases of animals, to doubt whether, after all, swine-fever might not originate *per se*, or being a disease difficult to diagnose in the living animal, it would from one or other of these causes prove to be beyond control.

The figures given above have entirely dispelled any such ideas, and the reasons for the present improvement as regards the prevalence of the disease, are not difficult to explain.

In the first instance, it had become evident that so long as the impression remained that swine-fever might originate from ordinary causes, the chief of which was believed to be injudicious or improper feeding, any morbid appearance found in the intestines of the pig produced from those causes, would for ever be regarded as indicative of swine-fever unless some definite professional evidence was forthcoming to dispel such ideas.

As regards rabies the returns for the year 1897 show a satisfactory diminution in the number of cases in Great Britain.

Unfortunately the report of glanders or farcy is not so satisfactory, and we append it in full:—

Glanders or Farcy.

There has been an increase of 235 cases of glanders during 1897 compared with the previous year. This increase is not apparently due to its wider distribution but to the detection of the disease in the occult stage in the living animal by the aid of mallein. The greatest increase has been in Scotland where the number of cases has risen from 98, in 1896, to 297, in 1897.

For many years glanders has been prevalent among the horses of Glasgow while the rest of Scotland has been comparatively free, and the local authority of that city, with a view to eradicating the disease within their own district, invited the horse owners of the city to allow their animals to be tested with mallein, on the understanding that if those which re-acted proved to be affected with glanders on *post-mortem* examination, one-fourth of the value of the animal would be paid, and full value if found free from disease. Under this arrangement the veterinary inspector of the Glasgow local authority tested 320 horses; of these 147 re-acted and were subsequently slaughtered. On a *post-mortem* examination being made of the 147 horses which had reacted no glanders nodules could be detected in the lungs of 14 of the horses; in the remaining 133, however, the lesions of the disease were found to be present.

At the present time Mallein is accepted by all veterinarians as a thoroughly reliable aid to diagnosis in occult cases of glanders, but until the horse owners generally become equally convinced of its value, it is hardly to be expected that they will consent to have their horses slaughtered so long as they can perform their regular work with apparent ease and present no external evidence of disease, simply because their animals have re-acted to mallein, unless they receive their full value.

At the present time there are still many points in connection with the pathology of glanders about which a great divergence of opinion exists among the members of the veterinary profession, both here and abroad. By some it is asserted that the ordinary mode of infection is by the alimentary canal; others, who only recognise glanders by the presence of lesions in the lungs, hold that the infection, like that of contagious pleuro-pneumonia of cattle, is more probably contracted by inhalation; at the same time, all admit that it may be produced by inoculation through the abraded surface of the skin or the lining membrane of the nostril. That the disease can be produced by the introduction into the digestive system of fresh glanderous material is a fact with which the veterinary profession have long since been acquainted. This was repeatedly experimentally proved years ago.

It has lately been suggested that there is a much greater tendency on the part of some horses to recover from glanders than has generally been known, and that repeated

injections of mallein have a curative effect, but whether horses which react to mallein, and after repeated injections with that material having ceased to react, can be properly regarded as recovered and incapable of infecting others, is a very moot point.

With a view, as far as possible, to set at rest many points of a doubtful nature in connection with glanders, a series of experiments are being conducted by the veterinary officers of the Board, and it is hoped that in course of time a special report on this most important subject will be produced.

A Text-book of Horse-shoeing by A. Lungwitz, Director of the Shoeing School of the Royal Veterinary College, Dresden. Translated by John W. Adams, A.B., V.M.D., University of Pennsylvania.

It is something to be thankful for that the days are gone when almost the only books on the Art of Horse-shoeing were compiled by theoretical persons—sportsmen and others whose only title to write on the shoeing of horses often arose from their ability to ride one.

Within recent years we have had one or two excellent manuals on the subject, and the work of Professor Lungwitz is a welcome addition to the number. It is very evident from a perusal of the book that the author is a practical shoer as well as a veterinarian, and he has found in Professor Adams a translator who has faithfully and happily fulfilled his office.

The book is divided into three parts. The first part—nearly a quarter of the book—deals with the anatomy and physiology of the foot.

We are a little afraid that while this portion will well repay the careful reading on the part of anyone interested in the subject, it will be more welcome to the veterinary student than to the horse-shoer, who will, we believe, find the chapter on the position of the limbs and the flight of the hoofs somewhat beyond him. The anatomical descriptions are, however, so clear and are so well illustrated that they ought to be grasped by anyone.

The second part is concerned with the making of shoes, preparing the foot, and nailing on, forging and interfering, frosting, &c. For this part and for the next on shoeing diseased feet, we have nothing but praise. The directions are in every way excellent, and it is apparent that the many valuable hints of a practical nature which one may gather from every page can only have emanated from a past master of the art.

The concluding part is on shoeing mules, asses, and oxen; we refrain from offering an opinion on this division. We are convinced that the work will have, as it deserves, a ready sale and we wish it every success.

Communications, Books, Journals, etc., Received.

The Lancet; Land and Water; Veterinarian; Veterinary Record; American Veterinary Review; Journal of Comparative Medicine; Australian Farm and Home; Results of Use of Tuberculin, by James Wilson, M.A.; Bacteriological Diagnosis, by St. John Reid; Country Life Illustrated; Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); L'Echo Vétérinaire (Liége); Annales de Médecine Vétérinaire (Brussels); Berliner Thierärztliche Wochenschrift (Berlin); La Clinica Veterinaria (Milan); Il Nuovo Ercolani (Pisa); La Revista Veterinaria (Buenos Aires); Deutsche Thierärztliche Wochenschrift (Hannover und Karlsruhe); Archivos de Medicina Lisbon: José Bastos); The Johns Hopkins Hospital Reports; a Text Book of Veterinary Ophthalmology, by Geo. G. Van Mater, M.D., D.V.S.; Trattato di Tecnica, e. Terapeutica Chirurgica Animali Domestici del Dott. N. Lanzillotti, Buonsanti; the Clinical Diagnosis of Lameness in the Horse, by W. E. A. Wyman, V. S., South Carolina; the Scottish Medical and Surgical Journal.